



University of Colorado **Denver**

2021-22 Graduate Catalog



Prepared by the Office of the Registrar

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CU DENVER

CU in the City

In the heart of downtown Denver, CU Denver combines innovative research and accessible education with the advantages that only a dynamic urban environment can provide. On our campus where all are welcome, we offer the quality education that the University of Colorado is known for at an exceptional value. For nearly 50 years, we have helped 100,000+ graduates achieve their goals—achieve yours too, with a degree from CU Denver.

Auraria Campus

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Website: [ucdenver.edu](https://www.ucdenver.edu) (<https://www.ucdenver.edu>)

How to Use this Catalog

The CU Denver Catalog is comprised of four main sections, About the Catalog and Archive Information (p. 8), About CU Denver (p. 9), Undergraduate Catalog (<http://catalog.ucdenver.edu/cu-denver/undergraduate/>), and Graduate Catalog (p. 38).

The About the Catalog and Archive Information (p. 8) provides information about the published catalog and information to find previous versions of the catalog.

The About CU Denver (p. 9) section provides information about CU Denver that is beneficial for undergraduate and graduate students, faculty, staff, and our campus community. The information in this section of the catalog includes:

- Campus (p. 13)
- Administration (p. 19)
- Related Organizations (p. 21)
- Student Services and Other Student Resources (p. 22)
- University Policies (p. 33)

The Undergraduate Catalog (<http://catalog.ucdenver.edu/cu-denver/undergraduate/>) section provides information focused towards the undergraduate student population including:

- Admissions (<http://catalog.ucdenver.edu/cu-denver/undergraduate/admissions/>)
- Student Finances (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/>)
- Tuition Classification (<http://catalog.ucdenver.edu/cu-denver/undergraduate/tuition-classification/>)
- Records and Registration (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/>)
- Academic Policies and Procedures (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>)
- Advising and Other Student Services (<http://catalog.ucdenver.edu/cu-denver/undergraduate/advising-other-student-services/>)
- Undergraduate Core Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)

- Graduation (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/>)
- Schools, Colleges, and Departments (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/>)
- Courses A-Z (<http://catalog.ucdenver.edu/cu-denver/undergraduate/courses-a-z/>)
- Programs A-Z (<http://catalog.ucdenver.edu/cu-denver/undergraduate/programs-a-z/>)

The Graduate Catalog (p. 38) section provides information focused towards the graduate student population including:

- Information for Graduate Students (p. 38)
- International Admissions (p. 44)
- Student Finances (p. 46)
- Tuition Classification (p. 50)
- Records and Registration (p. 50)
- Graduate School Policies and Procedures (p. 59)
- Schools, Colleges, and Departments (p. 59)
- Courses A-Z (p. 520)
- Programs A-Z (p. 518)

ABOUT THE CATALOG AND ARCHIVE INFORMATION

The 2021-2022 CU Denver catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2021, Spring 2022, and Summer 2022 semesters. Although this catalog was prepared using the best information available at the time, all information is subject to change without notice or obligation. The university claims no responsibility for errors that may have occurred during the production of this catalog.

The courses listed in this catalog are intended as a general indication of the University of Colorado Denver curricula on the Denver campus. Courses and programs are subject to modification at any time. Not all courses are offered every semester, and faculty teaching particular courses or programs may vary from time to time. The content of a course or program may be altered to meet particular class needs.

The catalog is published only online in an accessible format. In accordance with requirements under the Americans with Disability Act (ADA), alternate formats are available upon request.

The CU Denver catalog is produced by the Office of the Registrar (<https://www.ucdenver.edu/registrar/>) at the University of Colorado Denver (<https://www.ucdenver.edu/>). Previous archived editions of this catalog are available online (<https://www.ucdenver.edu/registrar/catalogs/archived/>).

The University of Colorado Denver is an affirmative action/equal opportunity employer and educator committed to excellence through inclusiveness.

ABOUT CU DENVER

University of Colorado Denver

The University of Colorado Denver was formed on January 11, 1973, lawmakers, upon proclamation of the governor, amend that state constitution to establish additional CU campuses, transforming the University of Colorado - Denver Center into the University of Colorado Denver (CU Denver). In 1977, CU Denver students began taking classes on the Auraria campus. Today, CU Denver educates more than 15,000 students and is the only public urban research institution in the state of Colorado.

The University of Colorado Denver offers a unique academic experience for students. Conveniently located in the heart of Denver, our students have unparalleled access to the business, cultural and political capital of the West. CU Denver is where academic rigor meets city vigor.

More and more undergraduates are discovering the value of classes in the city taught by professors who are connected to local companies and organizations. New housing adjacent to campus, easy commuting by RTD Light Rail and discounts to cultural and sporting events give students many options for immersion in vibrant city life. In addition, affiliations with research labs and hospitals at CU Anschutz make CU Denver an excellent place to start a health care career.

The University of Colorado Denver enrolls students from 46 different states and countries, and awards over 3,800 undergraduate and graduate degrees every year. It is known for its programs in urban sustainability, criminal justice, business, education, applied science and engineering, film and music industry as well as a full array of professional health programs. The graduate student population is a diverse mix of ages and ethnicities, creating a rich environment for learning and networking.

Other reasons why students choose the University of Colorado Denver:

Small class sizes: average undergraduate student-to-teacher ratio is 18:1.

The Denver vibe: Colorado has always attracted the adventurous. Denver ranks as #2 Best Place to Live (U.S. News & World Report), with an extensive network of bike trails and quick access to mountain sports. CU Denver is adjacent to a thriving arts district.

Collaborative culture: Cross-disciplinary learning and research is a core value: programs blend technology with health care, business with public policy, and behavioral health with architecture.

Choices: With seven schools and colleges offering more than 100 degree programs, the University of Colorado Denver | Anschutz Medical Campus is a major university for the coming century.

About Our Students

The diversity of our student body is a source of deep pride. With students of color making up 42 percent of the student body, CU Denver is the most diverse research university in Colorado. Classes are filled with traditional students who enrolled after high school as well as transfer students and those who delayed college entry. Many professionals enroll mid-career to retool and strengthen their skills. The average age of an undergraduate student is 23 years while the average graduate student is 31 years old.

Bringing a rich mix of backgrounds, students travel across the country and the world to attend CU Denver. Domestic students come from 48 states and international students from 68 countries. All take advantage

of convenient courses at times that meet their schedules. An enviable student-to-faculty ratio of 18:1 and a high-tech advising platform means students receive focused attention from professors and a clear path to graduation.

University Quick Facts

CU Denver Quick Facts*

Enrollment

- 15,162 students
- 70% undergraduate, 30% graduate/professional
- 73% full-time students
- 86% from Colorado
- 14% nonresident students of which International students come from 66 different countries
- 44% male, 55% female
- 43% of new undergraduate students are transfers

Student-to-Faculty Ratio

- 18:1

Diverse Population

- 50% of enrolled students are students of color
- 51% of all new enrolled students are students of color
- Average age of undergraduate students: 23
- Average age of graduate students: 31
- Students from 49 states and DC and 66 countries

Average entering ACT score

- 23.0 Composite

Average entering SAT score

- 550 Math
- 551 Verbal

Average high school GPA

- 3.5

Schools and Colleges on the CU Denver Campus

College of Architecture and Planning (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-architecture-planning/>)

College of Arts & Media (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-arts-media-cam/>)
Business School (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/business-school/>)

School of Education & Human Development (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-education-human-development/>)

College of Engineering, Design and Computing (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/>)

Graduate School (p. 38)

College of Liberal Arts and Sciences (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/>)

School of Public Affairs (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/>)

Programs

More than 100 degrees and programs across seven schools and colleges

Degrees

- Bachelor's
- Master's
- Doctoral
- First professional

Most-enrolled Undergraduate Degree Programs

- Biology
- Psychology
- Music
- Fine Arts
- Architecture

Most-enrolled Graduate Degree Programs

- Business Administration
- Public Administration
- Counseling
- Architecture
- Leadership for Education Equity

Research Funding

More than \$400 million in sponsored research annually

Alumni

- 100,000+ alumni
- 67% live in Colorado

National Rankings

US News and World Report 2022

- #113 among Top Public Schools
- #106 Top Performer on Social Mobility
- #161 for Best Undergraduate Engineering programs
- #28 in Graduate Healthcare Management programs
- #25 among Graduate Public Affairs programs
 - #10 in Environmental Policy and Management
 - #13 in Nonprofit Management
 - #11 in Public Finance and Budgeting
 - #22 in Public Management and Leadership
 - #25 in Public Policy Analysis
- #134 in online graduate education programs

Among Top Public Schools (2021)

- #47 for part-time MBA programs
- #19 for best online Master's in Criminal Justice program
- #97 for best online Master's in Education
- #16 for Graduate Public Affairs programs
- #59 for Statistics Programs
- #48 for Clinical Psychology Graduate program
- #80 for Mathematics Graduate programs

*Based on Fall 2020 enrollment

From the Chancellor

Welcome to Colorado's public urban research university, where a diverse student body through quality academics, ambitious research and creative work, and community engagement in the city we call home. We are CU in the city.

Your success is our #1 priority. At CU Denver, you will benefit from:

Academic choices: More than 100 high-quality, in-demand degree programs in seven schools and colleges, leading to bachelor's, master's and doctoral degrees; hands-on learning opportunities, including work in research labs, service learning, study abroad and work-study;

Powerful connections: To partnerships, projects, internships and career opportunities in downtown Denver; to the vibrant arts and culture scene at our front door; and to a network of influential alumni who are leaders in Denver's civic, nonprofit and business communities;

Outstanding location: Access to a vibrant, safe urban lifestyle; resources and support to develop innovative solutions to complex local and global issues; and opportunities to build your skills in the city ranked by Forbes as the #1 Best Place for Business and Careers.

CU Denver is a place of academic excellence, where you will gain the powerful combination of immersive classroom and project-based experiences that are in demand today. Here you will meet gifted faculty, experts in their field, dedicated to student success, academic excellence and the real-world applications of their research and creative work. You'll interact with fellow students who are diverse, goal-oriented and energetic. Whether you engage in undergraduate or graduate studies, the University of Colorado Denver degree earns global respect and you can be confident that you will have been well-prepared for the next stage of your work or academic life.

We're delighted you've chosen CU Denver!

Michelle A. Marks, PhD
Chancellor

CU Denver Strategic Priorities

In 2016, CU Denver established five strategic priorities to guide its ongoing success as Colorado's public, urban, research university.

- Elevate student success (<https://www1.ucdenver.edu/about/leadership/strategic-planning/strategic-priorities/student-success/>) through increased enrollment, retention and graduation rates.
- Advance scholarly excellence (<https://www1.ucdenver.edu/about/leadership/strategic-priorities/scholarly-excellence/>) and innovation in teaching, research and creative work.
- Strengthen our position and impact as a vital community asset (<https://www1.ucdenver.edu/about/leadership/strategic-priorities/community-impact/>).
- Create a more cohesive, collaborative and inclusive culture (<https://www1.ucdenver.edu/about/leadership/strategic-priorities/inclusive-culture/>).
- Achieve long-term financial sustainability (<https://www1.ucdenver.edu/about/leadership/strategic-priorities/financial-sustainability/>) and stability.

CU Denver 2030

Strategic Planning

The *100 Days of Listening* report serves as the foundation for CU Denver's strategic planning process. With the report's initial discoveries in mind, we turn our attention toward creating a vision and strategy to

differentiate CU Denver and realize our full potential as a public urban research university.

With our sights set on who we want to be in 2030, we welcome all members of the CU Denver community to share their boldest ideas.

To learn more about CU Denver's Strategic Planning initiatives, please visit our website (<https://www.ucdenver.edu/about/leadership/strategic-planning/>).

Our History

CU Denver is one of four campuses that make up the University of Colorado system (https://www.cu.edu/about-cu-system/?_ga=2.198221871.1449492668.1588702111-627714767.1588702111&gac=1.181904767.1386808742.Cj0KCQjwm9D0BRCMARIsAlfvflakqGT2NJ3o-yVndLuxSeNevi1VDZvGYzQLUYSBgrmd1ZNgMK4roCEaAhlyEALw_wcB). We began in 1912 as an extension of the University of Colorado Boulder. In 1973, we became an independent campus, and the University of Colorado Denver was officially founded. In 2023, we will celebrate CU Denver's 50th anniversary.

CU Denver Timeline

Take a look at where we began, occupying one building in downtown Denver, and where we ended up—we now serve more than 15,000 students a year.

1912 – 1972

The Denver Extension

In 1912, the University of Colorado in Boulder established the Denver extension to offer courses in downtown Denver. By 1969, academic offerings included 34 programs at the undergraduate and graduate levels. In 1971, the current College of Liberal Arts and Sciences (<https://clas.ucdenver.edu/>) was established. These early years made it clear there was a need for quality academic programs in the city of Denver.

1973 -- 1979

University of Colorado Denver Established

In 1973, Colorado lawmakers amended the state constitution to establish additional CU campuses, transforming the University of Colorado – Denver Center into the University of Colorado Denver. In its first year as an independent institution, CU Denver founded the School of Education & Human Development (<https://education.ucdenver.edu/>) and the School of Public Affairs (<https://publicaffairs.ucdenver.edu/>).

In 1977, CU Denver students began taking classes on the Auraria Campus, alongside students from Metropolitan State University of Denver and Community College of Denver. CU Denver students, faculty, and alumni marched on the Colorado State Capitol in 1979—to preserve the university's sovereignty in the face of a potential merger.

1980 – 1990

Significant Growth

During the 1980s, CU Denver grew significantly as a university, establishing three additional colleges: the College of Architecture and Planning (<https://architectureandplanning.ucdenver.edu/>), the College of Arts & Media (<https://artsandmedia.ucdenver.edu/>), and the College of Engineering, Design and Computing (<https://engineering.ucdenver.edu/>). In 1990, the university acquired a new building at the corner of 14th and Larimer Streets, which became the CU Denver Building. This location east

of Speer Boulevard extended the university's footprint into LoDo (lower downtown).

1994

International College Beijing

In 1994, CU Denver joined forces with China Agricultural University to establish the International College Beijing (<https://www.ucdenver.edu/academics/InternationalPrograms/OIA/icb/Pages/default.aspx>) (ICB). This global collaboration was the first of its kind in China. The cross-cultural exchange of students and faculty increased CU Denver's reputation as a truly diverse academic community.

2000 – 2010

Colorado's Public Urban Research University

In 2004, the Board of Regents voted to consolidate CU Denver with the CU Anschutz Medical Campus. The consolidated CU Denver | Anschutz Medical Campus holds R1 status as a research university, the highest rating given by Carnegie Institute. CU Denver claimed its identity as “CU in the City,” Colorado's only public urban research university.

2011 – 2013

Welcome Milo the Lynx

In 2013, CU Denver unveiled its official mascot, Milo the lynx, who was named for a combination of the Mile High City and the campus' location near Lower Downtown.

2014 – Present

Campus Construction

The first part of the new millennium also brought significant change to CU Denver's campus. In 2014, the Student Commons Building opened as the university's first newly built facility, and in 2018, the Lola & Rob Salazar Student Wellness Center opened as the first named building on campus. The year 2021 will mark completion of a new residence hall named City Heights, designed specifically for first-year students.

Accreditation

The University of Colorado Denver is institutionally accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools.

The commission can be contacted at:

230 South LaSalle Street, Suite 7-500
Chicago, IL 60604

Telephone: 1-800-621-7440

Many professional organizations have also granted accreditation to specific academic programs, colleges and schools at the Denver Campus, including:

- Accreditation Board for Engineering and Technology
- Association for the Advancement of Collegiate Schools of Business-International
- Colorado State Board of Education
- Commission on Accreditation of Healthcare Management Education

- Council for Accreditation of Counseling and Related Educational Programs
- Council for the Accreditation for Educator Preparation
- Landscape Architecture Accreditation Board
- National Architectural Accrediting Board
- National Association of Schools of Music
- National Association of Schools of Public Affairs and Administration
- Planning Accreditation Board

Our Programs

As Colorado's only public urban research university, CU Denver is devoted to the needs of the residents of the city and the region. A solid foundation of academic and general education is assured through a comprehensive core curriculum. Students may pursue graduate education through all of the campus' colleges and schools. Pre-professional training in the fields of education, architecture, law, journalism and health careers is also available. Complete listings of areas of study available on the Denver Campus are available in the Programs (<http://catalog.ucdenver.edu/cu-denver/undergraduate/programs-a-z/>) section of the catalog.

The colleges and schools sections of this catalog provide information on bachelor's, master's and doctoral degree programs, policies on requirements for graduation, course requirements, course descriptions and other similar information.

College of Architecture and Planning (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-architecture-planning/>)

College of Arts & Media (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-arts-media/>)

Business School (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/business-school/>)

School of Education & Human Development (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-education-human-development/>)

College of Engineering, Design and Computing Course (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/>)

College of Liberal Arts and Sciences (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/>)

School of Public Affairs (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/>)

Continuing and Professional Education

The Division of Continuing and Professional Education offers certificate/certification courses, professional development programs, precollegiate outreach programs and personal enrichment courses across the state of Colorado. Courses are offered in a variety of formats, including traditional on-campus, off-campus, online, hybrid, weekend, evening, short and condensed courses and many others.

Registration and tuition vary by school or college. Contact the specific school or college to learn about current program and course offerings or send an inquiry to continuingeducation@ucdenver.edu.

CAMPUS

Our Campus and Community

Located in downtown Denver, the University of Colorado Denver, Denver Campus is physically located on the 151-acre Auraria Campus, which is shared with two other institutions: Metropolitan State University of Denver and Community College of Denver. Because we share facilities, our students have access to the level of resources found at much larger public universities.

Three beautiful buildings are central to our student community: Student Commons, Student Wellness Center, and City Heights, our new first-year student housing building (opening Fall 2021). Students get together at Student Commons to study and eat. It's also home to Lynx Central, a help desk for prospective and current students that provides resources, referrals, and solutions. The Student Wellness Center houses a state-of-the-art sports and recreation facility, a Wellness Suite that includes the CU Denver Food Pantry, study rooms, a game lounge, and a two-story climbing wall. And City Heights, opening Fall 2021, will house our students in the center of campus life. On the east side of Speer Boulevard, you will find our three buildings located in the heart of downtown Denver: Lawrence Street Center, CU Denver Building, and the Business School. The three buildings are within walking distance of many restaurants, cafes, and shops, as well as the 16th Street Mall.

Our campus is convenient for students who live throughout the metro area's many diverse neighborhoods. Students who work downtown love that we are so close. And students who live north or south of the city along the Front Range Corridor also benefit from our centrally located campus.

Both our shared campus and our downtown location contribute to an inclusive community that fosters respect for diverse students and groups.

CityCenter Links Campus and Community

CityCenter provides university resources to civic, nonprofit, and business leaders. With a street-level, retail-like location at the southwest corner of 14th & Lawrence Street, CityCenter provides a physical and virtual portal for the community to connect with faculty expertise, student ingenuity, and other CU Denver resources. Staffed during regular business hours, CityCenter is open to community members who would like to access the university's knowledgeable faculty, innovative student population, and research capabilities.

About the Auraria Campus

The Auraria Campus is a dynamic and vibrant higher education community located in the heart of downtown Denver. The 150-acre campus is shared by three separate and distinct institutions of higher learning: Community College of Denver, Metropolitan State University of Denver, and University of Colorado Denver. This is the most efficiently utilized campus in the state. Classrooms on the Auraria Campus are used an average of 50+ hours per week. Classes are held from 8 a.m. to 10 p.m.; for building hours, please visit the AHEC website (<https://www.ahec.edu/campus-info/building-hours/>).

The Auraria Campus offers numerous amenities to students, faculty and staff, from the largest bookstore in the Rocky Mountain region to a state-

of-the-art fitness facility. Details of these amenities are outlined in this section.

In addition to its proximity to the thriving business and industry of downtown Denver, the Auraria Campus has a distinct historic flavor. The Tivoli Student Union is housed in a renovated brewery originally built in the 1860s. Historic Ninth Street Park, St. Cajetan's Church/Performing Arts Center, St. Elizabeth's Church, and the Emmanuel Art Gallery are also located on campus.

Auraria Higher Education Center

The Auraria Higher Education Center (AHEC) is a separate state entity whose role is to provide and manage shared services, facilities, and property to support these prominent institutions in achieving their goals. The collective student population is approximately 38,000, with an additional 5,000 faculty and staff.

AHEC provides common services for the campus including: classroom scheduling, facilities services and construction, campus police, telecommunications infrastructure, student union, media services, book store, early learning center, parking and transportation, mail services and facilities master planning. Visit the AHEC website (<https://www.ahec.edu/>) for additional information.

Auraria Campus Event Services

Location: 900 Auraria Parkway, Suite 325

Phone: 303-556-2755

Email: acesmaindesk@ahec.edu

Website: www.ahec.edu/eventservices/ (<http://www.ahec.edu/eventservices/>)

Auraria Campus Event Services (ACES) manages all non-academic events that take place on the Auraria Campus. From a simple meeting to an impactful campus event like Spring Fling or Fall Fest, our team is committed to providing quality service and producing successful events.

A majority of the event spaces on campus are located in the Tivoli Student Union, but other event venues are also available in St. Cajetan's Event Center, the PE/Event Center, and several outdoor event spaces including the Tivoli Quad. Student groups can contact us for assistance with locating and booking a space and coordinating support services.

Services available include:

- event facility scheduling
- event coordination and planning
- audiovisual rental, set-up, and support
- management of student filming on campus
- coordination of event advertising on campus
- organization of information and fundraising tables

Auraria Early Learning Center (Child Care Center)

Location: 950 9th Street Park

Phone Number: 303-556-3188

Email: Please refer to website for more information

Website: <https://www.ahec.edu/early-learning-center/> (<https://www.ahec.edu/services-departments/early-learning-center/>)

The Auraria Early Learning Center (AELC), a 5-star Colorado Shines-rated center, provides full-time programs for children 12-months to 5-years-old and summer camp for children through age 8. The center serves the students, faculty, and staff of the Auraria Campus. On a space-available basis, the center also serves the Denver community. All of the center's programs are fully licensed by the Colorado Department of Human Services.

Auraria Event Center/Student Recreation Center

Location: PE Building/Event Center, 1255 10th St Plaza, Denver, CO 80204

Phone: 303-615-1500

Email: campusrec@msudenver.edu

Website: <http://msudenver.edu/campusrec> (<http://msudenver.edu/campusrec/>)

The Auraria PE/Event Center is a 2,800-seat facility for team and individual sport activities, academic programs, events and conferences. Our purpose is to foster individual and community well-being through the power of engagement, leadership, partnership and recreation. We provide a wide range of affordable, high quality, and inclusive recreational and wellness opportunities designed to support personal, academic, community and institutional success of Auraria Campus students, faculty, staff, alumni and the community at-large. Our building consists of Fitness and Wellness, Outdoor Adventure and Leadership, Recreational Sports, Educations/Certification, Member Services, Employment Opportunities, Partnerships, and Community Outreach.

Auraria Library

Location: 1100 Lawrence Street Denver, CO

Phone Number: 303-315-7763

Email: Please refer to website for more information

Website: <https://library.auraria.edu/>

The Auraria Library connects users with ideas through technology-enabled information discovery and delivery on an "anytime, anyplace" basis. The Library's collections of learning materials, resources, and research services support the information, research, and curriculum needs of the Auraria Campus. We strive to create a welcoming environment that fosters equity, diversity, and inclusion and nurtures creativity and learning. We are deeply committed to ensuring equitable access to knowledge and information from diverse perspectives for everyone as we build a shared vision that challenges existing notions of the library and sparks discovery and curiosity about the world around us. Assistance from Library staff is available via one-on-one meetings, by phone, text, or chat on our website (<https://library.auraria.edu/>).

Auraria Media Center and Classroom Support

Location: 1100 Lawrence Street (East side of the Auraria Library), 015

Phone Number: 303-556-2426 **Classroom Equipment**

Service: 303-556-3342

Email: jennifer.kerber@ahec.edu

Website: <http://mediacenter.ahec.edu> (<https://www.ahec.edu/services-departments/classroom-support/media-center/>)

The Auraria Media Center and Classroom Support Services offers a full range of media services and classroom support:

- distance learning technologies including video conferencing, webinars, audio conferencing, video over IP and ISDN and videotaping of course delivery
- circulation of a wide range of audio, video and data (AVD) presentation equipment for one-time use
- long-term classroom equipment check-out
- production of content on digital tape, DVD, CD and videotape by an award-winning staff using state-of-the-art digital editing, graphics and animation systems
- quantity duplication of DVD, CD, audio and videotape media
- equipment maintenance and repair
- equipment/systems consultation and installation

The Auraria Media Center's 34-channel closed-circuit campus cable system can be used in the classroom to broadcast channels such as CNN, MSNBC, History, Discovery, A&E, PBS, CSPAN, NASA and local television networks. One channel is dedicated to and managed by each institution for distribution of programming of their choice.

Auraria Media Center staff are available to train faculty in the use of equipment in "smart" classrooms on campus and offer consulting services to faculty and other clients in such areas as media design and production, effective use of media types and effective use of distance learning technologies, effective use of those technologies and equipment selection to best meet instructional needs.

Auraria Media Center and Classroom Support Services will handle all of your classroom needs regarding furniture, projector screens, whiteboards, smart classroom equipment and ADA furniture placement.

Emmanuel Gallery

Location: 10th and Lawrence Street Pedestrian Mall

Phone Number: 303-315-7431

Email: jeff.lambson@ucdenver.edu

Website: <http://www.emmanuelgallery.org/>

Tri-institutional campus on Auraria Campus for over 35 years. Historical landmark who received the Mayor's Art for Excellence in 2012 featuring national, international artists, designers and architects as well as featuring student and faculty shows for each school on campus. Emmanuel Gallery's exhibitions are always free and open to the public. Stop in for a relaxing break.

Health Center at Auraria

Location: Plaza Building 150

Phone Number: 303-615-9999 **24 Hour Mental Health Crisis**

Line: 303-615-9911

Email: Please refer to website for more information

Website: www.healthcenter1.com (<https://www.msudenver.edu/healthcenter/>)

Medical Care

The Health Center at Auraria provides primary medical care, disease prevention, health education, wellness promotion, and various specialty services to all registered MSU Denver, CCD and CU Denver students.

The Health Center is open Monday through Thursday from 8 a.m. to 5 p.m., and Friday from 8 a.m. to 3 p.m.

Eligibility

All current Students, faculty and staff on the Auraria Campus are eligible for medical services. Be prepared to show a Student I.D. card or a photo ID each time you check in. Click here for more information about eligibility and payment options (<https://healthcenter1.com/eligibility-fees-and-service-charges/>).

Payment

Patients who participate or are enrolled in the MSU Denver or CU Denver Student Health Insurance will have their covered charges submitted directly to the insurance carriers. Patients are required to pay at the time of service for any plan exclusions and co-payments.

Health Center @ Auraria accepts most major health insurance plans because we understand the importance of health insurance for the individuals we serve. As insurance benefits shift and change, it is important to know your plan and what is covered before your appointment with your provider.

In an effort to assist our patients, Health Center @ Auraria has listed below the insurance plans we accept. We encourage you to access your individual policy, and identify what your specific plan will cover. Please note that, while many wellness and preventative services may now be covered 100% by your plan, specific benefits will vary according to your policy benefits.

It is imperative that patients review and understand their financial responsibility and portion of the services that are provided to them. Please contact your insurance carrier for specific details of your plan. Click here for more information regarding health insurance (<https://healthcenter1.com/health-insurance/>).

We currently accept most insurance plans with the following carriers:

Aetna: <https://www.aetna.com>

Anthem Blue Cross/Blue Shield: <https://www.anthem.com>

Cigna: <https://my.cigna.com>

Cofinity: (refer to the link on the back of your insurance card)

Humana: <https://www.humana.com>

Multi-plan: (refer to the link on the back of your insurance card)

Rocky Mountain Health Plan: <http://www.rmhp.org>

TriCare: <https://tricare.mil> (<https://www.tricare.mil>)

United HealthCare: <https://www.myuhc.com>

Staff

The Health Center is staffed by Physicians, Physician Assistants, Nurse Practitioners, Radiologic Technologists, Medical Assistants, and Allied Health Professionals. Psychiatrists and Gynecologists provide specialty medical care.

Appointments

To be respectful of your time it is suggested that you schedule an appointment in advance by calling (303) 615-9999. Walk-in Care is also available on a "first come / first served" basis. Patients are encouraged to arrive early to increase the likelihood of Walk-in availability. Patients are scheduled for a same day or a future appointment according to the severity of their medical need.

Services

The Health Center at Auraria can treat the majority of your health concerns on-site, including illnesses, injuries and physicals. See the list below for other on-site services.

- Illness Treatment
- First Aid
- Urgent Care
- Physical Examinations
- Lab Testing
- X-ray
- Medications
- Skin and Mole Evaluations
- Immunizations
- Blood Pressure Check
- Annual Gynecologic Exams
- Sexual Assault Services
- Transgender Care
- Safer Sex Instruction
- Sexually Transmitted Disease Screening and Treatment
- Pregnancy Tests
- Birth Control Information and Supplies
- Colposcopy/Cryotherapy
- Referral to On-Site Physician Specialists
- Psychiatrist Consultations (referral needed)
- Cholesterol Screening/Fitness Analysis
- Minor Surgery/Suturing/Biopsies

Free Clinical Services

The Health Center at Auraria offers a variety of services at no charge regardless of insurance coverage. These exclusive free services are available to all MSU Denver, CU Denver, CCD and AHEC students, faculty and staff.

Free services include:

- Flu Vaccination
- HIV Testing, including Rapid HIV Testing
- Nutritional Counseling
- Prescriptive Exercise Rehabilitation
- Tobacco Cessation - includes free medication if indicated

King Academic and Performing Arts Center

Location: 855 Lawrence Way

Phone Number: 303-556-2296

Email: Please refer to website for more information

Website: www.ahec.edu/kingcenter/ (<http://www.ahec.edu/kingcenter/>)

The King Center houses six performing spaces: three permanently assigned production studios, a 197-seat recital hall; 520-seat concert hall; and the 270 seat Eugenia Rawls Courtyard Theatre. There are dressing rooms, green room, recording studio, lighting lab, music electronics lab, classroom space, box office, scene shop, paint shop and costume shop. All spaces are fully equipped with state-of-the-art equipment and a variety of spaces for exhibiting fine art. The entire facility has more than 180,000 square feet dedicated to the education of the student and development of the student who wishes to study performance/arts. The center can support many forms of entertainment, anywhere from legit theatre to large choral ensembles and other forms of performances.

Tivoli Student Union

Location: 900 Auraria Parkway #325

Phone Number: 303-556-6330

Email: an (angela.levally@ahec.edu)gela.levally@ahec.edu (Angela.LeValley@ahec.edu)

Website: www.ahec.edu/tivoli (<http://www.ahec.edu/tivoli/>)

The Tivoli Student Union, managed by the Auraria Higher Education Center's Student Facilities Services department, provides a wide variety of amenities for the campus community. As the hub of the campus, the Tivoli Student Union houses the campus bookstore, called Tivoli Station, full-service restaurants and a food court, conference and meeting spaces, and facilities for recreational, social, and organized co-curricular student activities. The following services are located in the Tivoli Student Union:

- Tivoli Station (formerly Auraria Campus Bookstore)
- Full-service restaurants and a food court
- ID Station (located within Tivoli Station)
- Conference and meeting spaces
- i-lov-iT Market convenience store
- Tivoli Starbucks
- Facilities for recreational, social, and organized co-curricular student activities
- Credit Union of Denver
- Free mobile charging stations (located in Tivoli Station)
- Study lounges and spaces

ID Center (Commuter Resource Center)

Location: 900 Auraria Parkway, Suite 269

Phone Number: 303-556-8352

Email: ids (idstation@ahec.edu)tation@ahec.edu (IDStation@AHEC.edu)

Website: www.ahec.edu/id-center (<http://www.ahec.edu/id-center/>)

The Commuter Resource Center (ID Center) provides information about programs and services available to the campus community related to commuting to campus, student IDs, the RTD CollegePass, off-campus housing, getting around campus, and much more. Visit the ID Center to get your University of Colorado Denver student ID card and your RTD CollegePass smart card for unlimited rides on the RTD bus and light rail system.

Tivoli Station (Campus Bookstore)

Location: Tivoli Student Union, suites 105 and 205

Phone number: 303-556-4286

Email: tivolistation@ahec.edu

Facebook: facebook.com/TivoliStation (<http://www.facebook.com/TivoliStation/>)

Website: www.tivolistation.com (<http://www.tivolistation.com>)

We've got you covered at Tivoli Station, your best resource for **technology, CU Denver spirit gear, and cost-saving options for textbooks**. We offer both convenience and value. Look to us for easy one-stop shopping and a variety of programs designed to benefit students.

• Tech Station

As an **Apple Authorized Campus Store** and **Apple Authorized Service Provider**, we offer student discounts and in-store tech support. We also carry **Dell** computers, discounted HP technology, calculators, flash drives, headphones, and more.

• Book Station

Thousands of textbook titles are available to rent (save up to 50%) or **buy new or used**. At the end of each semester, sell your used books for cash with the **Textbook Buyback Program**, a service we offer to help offset student expenses.

You can also visit [ahec.verbacompare.com](http://www.ahec.verbacompare.com) (<http://www.ahec.verbacompare.com>) to compare textbook prices from the web, giving you options to find the best value available.

• Lynx Station

Show your school spirit with **CU Denver clothing and gear**, such as shirts, hats, pants, lanyards, hoodies, mugs, and water bottles.

• Supply Station

We offer a variety of course supplies, including general school supplies and art, culinary, and science lab materials.

• Reading Station

In the general merchandise area, we provide study aids, reference materials, gift items, and discounted New York Times Bestsellers.

• Charging Station

Charge your device for free using one of our phone ports or outlets.

• Snack Station

Grab a snack while you are waiting for your device to charge, or take it on the go. We have pre-wrapped sandwiches, drinks, yogurt, chips, and candy.

• Campus Commitment

We are committed to the campus. Revenue from the bookstore helps fund campus programs and keeps your student bond fee down. We are also one of the largest student employers on campus.

Downloadable PDF: General-Campus-Map.pdf (<http://catalog.ucdenver.edu/cu-denver/about-cu-denver/campus/General-Campus-Map.pdf>)

For an interactive version of the CU Denver campus map, please visit the Campus Map website (<https://www.ucdenver.edu/maps/cu-denver-map/>).

For additional Auraria Campus maps (including but not limited to parking, campus accessibility, landing zones and lounges), please the Maps website (<https://www.ahec.edu/campus-info/maps/>).

Parking & Transportation Services

Location: 777 Lawrence Way, 1st Floor

Phone: 303-556-2003

Email: ahec_parking@ahec.edu

Website: <https://www.ahec.edu/services-departments/parking> (<https://www.ahec.edu/services-departments/parking/>)

A degree should help you get somewhere, and how you get to campus to earn that degree is an important thing to consider. CU Denver students have several options for traveling to and from campus safely and efficiently. CU Denver is conveniently located downtown near multiple light rail stations and bus stops. Bicycle commuting is also a popular option, given Denver's sunny weather, active culture, and miles of protected bike lanes. If you prefer to drive, there are parking spots available, too.

Parking Garages and Lots

Click here (<http://catalog.ucdenver.edu/cu-denver/about-cu-denver/campus/Parking-Map.pdf>) to download a copy of the parking map.

Tivoli Garage

Located at 9th Street and Auraria Parkway

- Use pay machine or pay-by-cell (license plate # needed)
- Payment required 24/7, 365 days a year
- **Payment is required immediately upon parking**
- Citations will be mailed instead of placed on the windshield

7th Street Garage

Located at Lawrence Way and 7th Street

- Attended Garage | Pay-on-exit
- Monday–Thursday: 6:30 a.m.–10:30 p.m.
- Fridays: 6:30 a.m.–6 p.m.
- Saturdays: 8 a.m.–4:30 p.m.
- Sundays: closed (except for special events)

*Please Note: As of November 9, 2020:

- The 7th Street Garage will not be attended.
- Parking validations will no longer be accepted
- Parking in the 7th Street Garage will be available for 7th Street Garage and Juniper Permit Holders, and all Gold Passport holders
- You can pay for parking with the free ParkMobile App, or you can call (877) 727-5457 and enter Zone #3047

5th Street Garage

Located at 5th Street and Walnut Street

- Use pay machine or pay-by-cell (license plate # needed)
- Payment required 24/7, 365 days a year
- Payment is required immediately upon parking

Vehicles that remain in garages after closing may be retrieved by contacting the Auraria Campus Police Department at 303-556-5000.

Daily Fee Lots

- All surface lots on campus are unattended and require payment by license plate number at a pay station or by cell phone.
- You may keep the payment receipt for your records, but it doesn't need to be displayed on your dash.
- Payment is required immediately upon parking.

Metered Parking

- Parking meters on the Auraria Campus are intended for short-term parking.
- Parking meters accept credit cards and coins.
- Parking permits and passports issued by Auraria Campus are not acceptable forms of parking meter payment.
- State issued blue disability placards and disability license plates are not exempt from payment at Auraria Campus parking meters.

Motorcycle Parking

- Motorcycle-designated spaces are available in the 5th Street Garage and Tivoli Parking Garage.

Accessible Parking

Accessible parking is available in nearly all lots on the Auraria Campus. Parking spaces are marked and reserved for vehicles that have a state-issued or campus-issued hangtag. See requirements below:

- **Permit lots and spaces:** an AHEC-issued permit is required
- **Daily-fee lots and garages:** a state-issued hangtag for persons with disabilities is required

All accessible parking on campus follows the standard Auraria Campus fee schedule. Daily-fee lots require payment at the time of parking.

Click here (<https://www.ahec.edu/files/general/Accessible-Parking-Guide.pdf>) to view the Accessible Parking Guide

Parking Permits

A number of lots are reserved for permit holders who purchase a prepaid permit each semester. Prepaid permits allow in-and-out privileges. Most permits can be customized to accommodate specific days of the week.

How to Purchase a Permit

- Purchase a Permit online » (<https://ahec.t2hosted.com/Account/Portal/>)
- Visit the Parking & Transportation Services Office (777 Lawrence Way in the 7th Street Garage). **In accordance with CDPHE Guidelines:** We are practicing safe social distancing, and only 5 people are allowed in the office at a time. The parking Staff is wearing masks, and you must wear a mask when you enter the office to purchase your permit.
- **Please bring the following:**
 - Current campus ID (or semester schedule)
 - Current vehicle registration
 - Payment in the form of a check, cash, or charge card (Visa, MasterCard, Discover, American Express)
 - For **accessible parking**, a valid disability parking registration, a valid disability parking placard or a valid disability license plate is required

Parking Rules and Regulations

The Auraria Campus Parking & Transportation Services is a self-supporting auxiliary enterprise, receiving no state appropriations.

Parking fees are established by the Auraria Board of Directors to provide sufficient annual revenue to support the cost of operation, maintenance, and development of the Auraria Campus Parking & Transportation Services.

State law prohibits the use of public funds or student bond fees for the construction or operation of the AHEC parking system. Therefore, construction improvement, maintenance, and operation of all parking facilities at Auraria Campus are financed solely through user fees.

Click here (<https://www.ahec.edu/files/general/Policy-Parking-Rules-Regs.pdf>) to view Parking Rules & Regulations

Public Transit (RTD) and Alternative Transportation

RTD CollegePass

The CU Denver RTD CollegePass provides students access to buses, light rail, Call-n-Ride, and Skyride. RTD CollegePass helps get you to and from campus and across the city. The cost for the pass is included in student fees.

Click here (<https://www.ahec.edu/services-departments/parking/rtd-alternative-transportation/>) for more information.

ADMINISTRATION

CU Denver Executive Team

Michelle A. Marks, PhD

Chancellor, University of Colorado Denver
BS, James Madison University
MA, George Mason University
PhD, George Mason University

Roderick Nairn, PhD

Provost and Executive Vice Chancellor for Academic and Student Affairs
BSc, University of Strathclyde (Scotland)
PhD, University of London (England)

Jennifer Sobanet

Vice Chancellor for Administration and Finance, CU Denver
BS, Marshall University
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BA, University of Georgia
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BA, University of California, Berkeley
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MFA, University of California, Riverside

University of Colorado System

The University of Colorado is a system of four campuses located in Boulder, Colorado Springs, Denver and Aurora. With combined total enrollments of over 60,000 students, the University of Colorado system consistently ranks in the top 15 among public universities and colleges in overall research expenditures and seventh among public universities in federally funded research. Awards for research within the system total more than \$920 million, with funding provided by federal agencies, appropriations from the state of Colorado and private foundations and donors.

Administrative Officers

Mark Kennedy

President, CU System

Annie Konegni Bacary

Associate Vice President and Interim Advancement Administration Office

Sheana Bull

Interim Senior Faculty Fellow for Online Learning

Scot Chadwick

Interim Associate Vice President for Online Learning

Theodosia Cook

Chief Diversity Officer

Leonard Dinegar

Senior Vice President and Chief of Staff

Harper Johnson

Associate Vice President of Transformation and Innovation

Michael Lightner

Vice President for Academic Affairs

Ken McConnellogue

Vice President for University Communication

Kathy Nesbitt

Vice President of Administration

Jose Padilla

Vice President, University Counsel & Secretary to the Board of Regents

Todd Saliman

Vice President and Chief Financial Officer

CU Board of Regents

Glen Gallegos, Chair

District 3
term expires 2025

Lesley Smith, Vice Chair

At Large
term expires 2025

Nolbert D. Chavez

District 7
term expires 2027

Heidi Ganahl

At Large
term expires 2023

Chance Hill

District 5
term expires 2025

John "Jack" Kroll

District 1
term expires 2023

Callie Rennison

District 2
term expires 2027

Sue Sharkey

District 4
term expires 2023

Ilana Spiegel
District 6
term expires 2027

RELATED ORGANIZATIONS

CU Denver Alumni

Mailing Address:

Lawrence Street Center
Office of Advancement | Alumni Engagement
1380 Lawrence Street Center, Suite 1201
Denver, CO 80204 (*mailing and physical*)

Telephone: 303-315-2333

E-mail: alumni@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/cu-denver-alumni> (<https://www.ucdenver.edu/offices/cu-denver-alumni/>)

CU Denver Alumni is the formal name for our community of former students including over 104,000 graduates from any of the University's undergraduate, graduate, and certificate programs. While 67% of our graduates stay in Colorado, our global community stretches across 105 countries.

CU Denver Alumni seeks to engage graduates in the life of the university and with each other through advocacy, philanthropy, volunteering, and lifelong learning.

CU Denver Alumni Relations sponsors activities and programs to benefit and engage alumni, current students, and friends of the university. By fostering loyalty among our alumni and providing opportunities for involvement, CU Denver Alumni Relations facilitates an environment in which alumni can establish life-long contact with their alma mater.

CU Denver Alumni is part of the Office of Advancement (<https://www1.ucdenver.edu/offices/office-of-advancement/home/>) which connects those who are passionate about education and research to the people and programs at CU Denver who can excel with their support.

Office of University Advancement

Mailing Address:

Lawrence Street Center
Office of Advancement | Alumni Engagement
1380 Lawrence Street Center, Suite 1201
Denver, CO 80204 (*mailing and physical*)

Telephone: 303-315-3601

Fax: 303-315-2063

Email: advancement@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/office-of-advancement> (<https://www.ucdenver.edu/offices/office-of-advancement/>)

The Office of Advancement connects those who are passionate about education and research to the people and programs at CU Denver who can excel with their support. We serve as a trusted campus and community resource that inspires alumni pride and private support to advance CU Denver's mission, and we work to ensure a bright and promising future for CU Denver through robust engagement, transformative philanthropy, and a deep sense of pride in the university. We are also grateful for the advocacy and support provided by the Chancellor's Development Committee (<https://www.ucdenver.edu/offices/office-of-advancement/about-us/chancellors-development-committee/>), a group of alumni and friends who volunteer their time and expertise in support of CU Denver's educational mission.

CU Denver academic leadership establishes priorities for private support, and gifts are directed to the specific schools, program, or purpose that the donor designates. CU Denver Advancement staff identify and/or generate interest in the university, assist donors in gift planning, solicit gifts in collaboration with academic partners and leaders, and establish and maintain relations with alumni. (Gift funds are managed and invested by the partner University of Colorado Foundation, which also manages the university endowment).

These gifts endow scholarships and professorships, further research, enrich academic programs, upgrade and construct facilities, and support projects and programs in all areas of the university.

STUDENT SERVICES AND OTHER STUDENT RESOURCES

Lynx Life

Here you are: At an urban university with powerful programs and opportunities—for your education, your career, your life. On a high-energy, downtown campus right next to the Rocky Mountains. Part of a strong CU Denver Lynx community, where we lift one another up to meet our challenges. You are right where you belong. Below are some of programs you are able to utilize as a CU Denver student.

CU Denver Live!

Location: Various Locations: refer to website for more information

Phone: 303-315-5483

Email: live@ucdenver.edu

Website: <https://cudenverlive.com/>

CU Denver Live! is a student run arts programming committee that works as a sub-committee under The Events & Partnerships. *CU Denver Live!* strives to program arts events that spark the interests of numerous types of students while maintaining a multicultural and educational mindset. Additionally the team hopes to create a fun and inclusive atmosphere that promotes school pride and a sense of community at CU Denver.

Center for Identity & Inclusion | Diversity, Equity & Inclusion

Location: Student Commons Building, Room 2007

Phone: 303-315-1880

Email: cii@ucdenver.edu

Website: <http://www.ucdenver.edu/about/departments/odi/CII/Pages/default.aspx>

Office Hours: 8:00 am - 5:00 pm

The Center for Identity & Inclusion (CII) provides services: a) to support underrepresented students and b) to promote a diverse and inclusive campus for all students, faculty, and staff.

American Indian Student Services

Location: Student Commons Building, Room 2007C

Phone: 303-315-1882

Email: grace.tyon@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/american-indian-student-services> (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/american-indian-student-services/>)

American Indian Student Services (AISS) welcomes students of all American Indian and Alaska Native heritages! AISS serves both students who are tribally enrolled and those who identify but are not enrolled in their tribes.

CU Denver American Indian and Alaska Native students represent more than 100 different tribes. The Denver Indian Community is strong! Many families in Denver live far from tribal homelands, yet retain tribal identities and cultures. Twenty percent speak Native languages. The Southern Ute and the Ute Mountain Ute Tribes, located in the Four Corners area are the two federally-recognized tribes in Colorado.

Asian American Student Services

Location: Student Commons Building, Room 2007E

Phone: 303-315-1879

Email: soyon.bueno@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/asian-american-student-services> (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/asian-american-student-services/>)

Asian American Student Services within the Center for Identity & Inclusion offers a wide array of services and programs to support, engage, and educate all students.

Our mission:

- Support the retention, graduation, and success of Asian American Pacific Islander students
- Encourage students to become actively engaged in their learning experience
- Promote students' exploration of social identity, leadership, and professional development
- Provide opportunities for networking

Black Student Services

Location: Student Commons Building, Room 2007F

Phone: 303-315-1881

Email: omar.montgomery@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/black-student-services/>

Black Student Services Program offers a uniquely-designed network of support services to assist students in all phases of their educational career at CU Denver. Since its inception in 1969, Black Student Services has helped hundreds of students with admission into undergraduate and graduate programs, academic counseling, and peer support services. Because we believe that students should have a strong supportive environment during their education, we subscribe to the concept of Jamaa II: "a second family away from home."

Latinx Student Services

Location: Student Commons Building, Room 2007H

Phone: 303-315-1878

Email: abenicio.rael@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/latinx-student-services> (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/latinx-student-services/>)

The mission of Latinx Student Services is to provide an inclusive environment to support the intersectional experiences, diverse cultures, and educational goals of Latinx students at CU Denver.

Undocumented Student Services

Location: Student Commons Building, Suite 2007

Phone: 303-315-1883

Email: uss@ucdenver.edu

Website: <https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/undocumented-student-services> (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/undocumented-student-services/>)

The mission of the Undocumented Student Services Program is to serve DREAMer and mixed status students at all intersections of

documentation and equity needs, to support DREAMers in achieving their degree, to create an equitable educational environment, and to advocate alongside students for continuous improvements in the DREAMer college experience. The University of Colorado Denver remains committed to providing access to all qualified students, including students under the Deferred Action for Childhood Arrivals (DACA (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/undocumented-student-services/terminology/>)) and Advancing Students for a Stronger Economy Tomorrow (ASSET (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/undocumented-student-services/terminology/>)) program. ASSET, DACA, Mixed Family Status (<https://www.ucdenver.edu/offices/diversity-and-inclusion/our-offices/undocumented-student-services/terminology/>), and undocumented students are valuable members of our student body whom we strive to ensure are safe and respected on our campus. We are pleased to provide a variety of services, support, and information for students, faculty, and staff to help undocumented students succeed at CU Denver and CU Anschutz.

Women & Gender Center

Location: Tivoli Student Union 310

Phone: 303-315-7262

Email: WGC@ucdenver.edu

Website: www.ucdenver.edu/wgc (<https://www.ucdenver.edu/wgc/>)

The Women & Gender Center (WGC) at CU Denver is committed to advancing issues of gender equity and supporting the gender-focused needs of students, faculty, and staff on the Auraria campus. The mission of the Women and Gender Center is to address gender inequities and foster a campus community that values inclusion, social justice, equity, and respect for everyone regardless of background and experience. We are committed to enacting intersectional feminism in our programming by exploring gender as it overlaps and interacts with the multiple identities that people inhabit across their lifespans. We serve all members of the CU Denver community, regardless of gender identity.

Disability Resources and Services Office

Location: Student Commons Building, Room 2116

Phone: 303-315-3510

Email: disabilityresources@ucdenver.edu

Website: <http://www.ucdenver.edu/disabilityresources> (<http://www.ucdenver.edu/disabilityresources/>)

The Office of Disability Resources and Services (DRS) is committed to providing equal opportunities and fostering the personal growth and development of students with disabilities. The DRS staff strives to meet the needs of a large and diverse community of students with disabilities. We are available to provide assistance and to arrange for reasonable accommodations that will address specific educational needs. Accommodations may include, but are not limited to, the following:

- Priority registration for classes
- Assistance in identifying volunteer note takers
- Alternative testing for assessment tests and classroom examinations
- Oral/sign language interpreters
- Real-time captioning
- Textbooks in alternate formats (audio taped, Braille, enlarged, scanned)

ESL Academy

Location: 1100 Lawrence St #014

Phone: 303-315-2383

Email: esl@ucdenver.edu

Website: <http://esl.ucdenver.edu>

The University of Colorado Denver's English as a Second Language (ESL) Academy offers a rich diversity of academic, social, and cultural learning opportunities. The Academy offers high-quality, year-round ESL instruction specifically designed for university preparation. The curriculum helps students improve their language skills through a rigorous program of study, campus involvement, and cultural and educational activities.

Our program offers the following distinctive advantages when compared against other programs:

The curriculum is designed especially for university-bound students. In addition to mastering academic English, students will learn how to succeed academically at the University of Colorado Denver.

Students in the ESL Academy will be considered University of Colorado Denver students. They will be on the university campus from day one of our program and will be eligible to live in university housing, though there will be limited availability for students who join our program mid-term.

Students will have access to all of the activities and resources that the university has to offer, not to mention the spectacular outdoors and urban life in Denver and Colorado.

The ESL Academy also offers the LynxDirect Pathway for students. This 16-week program allows students to complete level 5, our highest level, in the first 8 weeks of the semester and then complete 6 credits towards an undergraduate degree in the second 8 weeks of the semester.

When a student completes the ESL Academy successfully, s/he will automatically fulfill the University of Colorado Denver's English language proficiency requirement and will be eligible for full admission.

Students will be issued a Form I-20 from the University of Colorado Denver for a seamless immigration experience and will not have to transfer their immigration status to begin their degree program upon complete completion of the ESL Academy.

Students will benefit from a seamless transition to university degree programs after they successfully complete the ESL Academy, thus maximizing the prospects of their success.

For full details, visit the ESL Academy online at esl.ucdenver.edu. Here, students can get information about:

- The online application (<https://clas.ucdenver.edu/esl/future-students/application-information/>)
- Program information (<https://clas.ucdenver.edu/esl/academics/curriculum-overview/>)
- Tuition and Fees (<https://clas.ucdenver.edu/esl/future-students/tuition-fees/>)
- International Student Services (<https://www.ucdenver.edu/services/international-student-and-scholar-services/>)

If you have additional questions you may send an email to esl@ucdenver.edu or call 303-315-2383. Located at 1100 Lawrence Street #014 Denver, CO 80204

LGBTQ Student Resource Center at Auraria

Location: Tivoli Student Union 213

Phone: 303-615-0515

Email: info@glbtss.org

Website: <https://www.msudenver.edu/lgbtq/>

The LGBTQ Student Resource Center is a tri-institutional office on the Auraria Campus serving the students, faculty and staff of Metropolitan State University of Denver, Community College of Denver and University of Colorado at Denver. We are available to all Auraria students as a resource for exploring issues of sexual orientation and gender identity.

The LGBTQ Student Resource Center is located in the Tivoli Student Union, Room 213, and is staffed by a director and assistant director, with the support of student employees and volunteers. Input and involvement from the entire campus community are welcomed. Our center offers a variety of support, education, and advocacy services for the entire campus community including:

- Support for those who may have questions about their own sexual orientation, gender identity, gender expression, or that of a friend or family member
- Advocacy for students experiencing discrimination or harassment based on a real or perceived LGBTQ identity
- Speakers for events, workshops, and classes on various aspects of sexual orientation/gender identification
- Programs and workshops about working more effectively with the gay, lesbian, bisexual, and transgender communities and combating misinformation, misconceptions, and homophobia
- Resource library with over 1700 books and videos (documentary and cinema) available for research and leisure as well as a multitude of free literature regarding other organizations and services throughout Denver and Colorado that provide outreach, services, and advocacy.

LynxConnect

Location: 900 Auraria Parkway #439 (Tivoli Annex)

Need help connecting what you're studying to your future goals? LynxConnect is your one-stop-shop for enhancing your student experience, expanding your global perspective, researching your world, discovering internships, finding campus employment and exploring your career options.

Four Offices, One Location

Our brand new 15,000 square foot center is focused on providing you with experiences outside the classroom, making you more marketable as you prepare for your next chapter in life, career and job search. Make an appointment or drop in to meet with an expert who can tackle your questions and help you gain hands-on, real-world experience.

The Career Center

Location: Tivoli Student Union, LynxConnect, Suite 439

Phone: 303-315-4000

Email: CareerCenter@ucdenver.edu

Website: <https://www1.ucdenver.edu/services/career-center> (<https://www1.ucdenver.edu/services/career-center/>)

The Career Center offers a full array of services that prepare students for their transition from college to career. Students are encouraged

to participate in career-related events and services as early as their freshman year. This includes obtaining help in choosing a major, deciding on career options, and mapping out experiences necessary to be successful upon graduation. The Career Center also supports students in refining job search skills like resume & cover letter writing, interview preparation, and targeting employers through our internship and job board called Handshake.

The Career Center's mission is to provide personal and meaningful interactions with students, alumni and employers in order to prepare them for the world of work.

Internships

Location: Tivoli Student Union, LynxConnect #439

Phone: 303-315-7258

Email: Experiential.LearningCenter@ucdenver.edu

Website: <https://www.ucdenver.edu/lynxconnect/internships> (<https://www.ucdenver.edu/lynxconnect/internships/>)

Experiential learning includes a variety of activities with one common goal-to immerse you in hands-on learning outside the classroom where your experience is at the heart of the learning process. The Experiential Learning Center (ELC) serves students, faculty, and employers as a resource for experiential learning opportunities. We offer information, resources and support in the development and coordination of academic and non-academic internship experiences, professional skill development opportunities, and undergraduate research experiences.

Undergraduate Research & Creative Activities

Location: Tivoli Student Union, LynxConnect, Suite 439

Phone: 303-315-4000

Email: LynxConnect@ucdenver.edu

Website: <https://www.ucdenver.edu/lynxconnect/undergraduate-research> (<https://www.ucdenver.edu/lynxconnect/undergraduate-research/>)

The Office of Undergraduate Research & Creative Activities (URCA) is your connection to the research opportunities that are out there just waiting for you. We're here to help you get the information you need to jump-start your research career.

This is your chance to connect your classroom learning to real-world research opportunities through grants, work-study, summer fellowships, and more.

It's education through undergraduate research and creative activities and we call it EURēCA! Once you've discovered the possibilities, you'll see why.

The EURēCA! Program

The Education Through Undergraduate Research and Creative Activities (EURēCA!) Program is your connection to the support you need to succeed in research activities at CU Denver | Anschutz. We help with grants, student research jobs, and fellowships, and feature student projects at our annual symposium.

The Office of Global Education | Study Abroad

Location: Tivoli Student Union, LynxConnect Suite 439

Phone: 303-315-2001

Email: study.abroad@ucdenver.edu

Website: <https://www.ucdenver.edu/students/study-abroad> (<https://www.ucdenver.edu/students/study-abroad/>)

The Office of Global Education / Study Abroad provides academically and professionally relevant international experiences to a diverse student population at the University of Colorado Denver | Anschutz Medical Campus. These experiences equip students with cross-cultural skills necessary to succeed in an interconnected global society. The Office of Global Education is committed to providing students with a wide range of engaging and affordable study, internship, research, and clinical opportunities.

International program offerings vary to meet the needs and interests of all students. These programs are open to undergraduate, graduate, and international students; it is not necessary to be a particular major to participate. Program lengths range from two weeks to an academic year or more. The vast majority of programs do not require language proficiency beyond the English language.

The Office of Global Education strives to keep study abroad programs affordable. In most cases, students are able to utilize financial aid and are eligible for an array of internal and external scholarships. For the most current information on programs, policies, and funding, please visit the Office of Global Education website at <https://www.ucdenver.edu/students/study-abroad> (<https://www.ucdenver.edu/students/study-abroad/>) or visit LynxConnect in the Tivoli.

Office of International Affairs

Location: Lawrence Street Center, Suite 932

Phone: 303-315-2230

Email: Please refer to website for more information

Website: <https://www.ucdenver.edu/offices/international-affairs> (<https://www.ucdenver.edu/offices/international-affairs/>)

The Office of International Affairs (OIA) serves the university by providing administrative support, strategic advice, technical services, collaborative educational programs with the university's 13 schools and colleges, and related services that contribute to the strategic international goals of the university. OIA provides visa and orientation services to international students and scholars; offers expertise in the development and maintenance of undergraduate, graduate and professional global education; assists with brokering and designing bilateral international educational programs; and offers comprehensive international recruitment and admissions services. OIA addresses international policy issues, has oversight of international risk management protocols, serves as a resource for best practices in the internationalization of higher education, maintains central data bases pertaining to international activities of the university, advises on the development of international affiliations and agreements, assists departments/programs and schools/colleges with the development of comprehensive international strategic planning, and seeks to promote and support initiatives that advance international research, education, and global cooperation in order to enhance the reputation of the University of Colorado Denver | Anschutz Medical Campus.

OIA also serves as a resource for faculty seeking international research opportunities, provides a comprehensive list of international scholarship/fellowship information, and serves as the institutional liaison for the CIES Fulbright Scholars Program.

The divisions of OIA include:

- International Operations (<https://www.ucdenver.edu/offices/international-affairs/about/staff/international-operations> (<https://www.ucdenver.edu/offices/international-affairs/about/staff/international-operations/>))

- Global Education: Study Abroad (<https://www.ucdenver.edu/students/study-abroad> (<https://www.ucdenver.edu/students/study-abroad/>))
- International Admissions (<http://www.internationaladmissions.ucdenver.edu> (<http://www.internationaladmissions.ucdenver.edu/>))
 - For more information, visit the Undergraduate (<http://catalog.ucdenver.edu/cu-denver/undergraduate/admissions/international-admissions/>) and Graduate (p. 44) catalogs.

International Student and Scholar Services

Location: Lawrence Street Center, Suite 932

Phone: 303-315-2230

Email: isss@ucdenver.edu

Website: <https://www.ucdenver.edu/services/international-student-and-scholar-services> (<https://www.ucdenver.edu/services/international-student-and-scholar-services/>)

The International Student & Scholar Services (ISSS) unit in the Office of International Affairs serves approximately 1,400 international students and 500 international scholars from all over the world each year. ISSS is responsible for ensuring university-wide compliance with a wide range of federal regulations relating to the enrollment and/or employment of international students and scholars. ISSS creates immigration documents, coordinates Check-In and Fundamentals sessions for new international students, helps students maintain their immigration status once they are here, offers a variety of programs and activities, and advises students on everything from adjusting to a new culture to applying for work authorization. ISSS also works closely with other members of the University of Colorado Denver community to ensure the success of our international students. For additional information about ISSS staff members and the services we provide, please visit our website at international.ucdenver.edu/ISSS (<http://www.international.ucdenver.edu/ISSS/>)

International College Beijing

International College Beijing- <https://www.ucdenver.edu/offices/international-affairs/partners/international-college-beijing> (<https://www.ucdenver.edu/offices/international-affairs/partners/international-college-beijing/>)

International College Beijing (ICB) is a joint education program between the University of Colorado Denver (CU Denver) and China Agricultural University (CAU), located in Beijing, People's Republic of China. The partnership, formed in 1994, was one of the first of its kind approved by the Chinese Ministry of Education.

At ICB students can choose to earn a CU Denver Bachelor of Arts degree in either economics or communication on site in Beijing. Students can also choose to study in Denver to complete their undergraduate programs after a year or two of study at ICB. As courses are taught in English by CU Denver faculty, U.S. students can learn or perfect their Chinese while pursuing rigorous courses alongside ICB Chinese students, fostering a truly global classroom experience.

ICB is located on the east campus of China Agricultural University in the Haidian district north of downtown Beijing. The campus is a 30-minute ride from downtown Beijing, Beijing International Airport and major cultural centers such as Tiananmen Square, the Forbidden City and the Summer Palace.

Joanne Wambeke, International Student Cohort and International Operations Manager, joanne.wambeke@ucdenver.edu, 303-315-2121.

The Office of Student Life and Campus Community

Location: Tivoli Student Union 303

Phone: 303-315-7288

Email: studentlife@ucdenver.edu

Website: <https://www.ucdenver.edu/student-life> (<https://www.ucdenver.edu/student-life/>)

The Office of Student Life integrates the academic, residential, and co-curricular spheres of student's lives, linking the out-of-class experience to the academic mission of the University while enhancing the overall educational experience of students through the development of, exposure to and participation in social, cultural, intellectual, recreational, leadership and governance programs. Student Life and Campus Community is the advising, coordinating, resource and general information center for student organizations, the academic honor societies student government and the student newspaper. We collaborate with students, faculty, administrators, and other partners both inside and outside of the CU Denver community to create safe environments for students. In addition, we create opportunities for students to learn through active participation and reflection where they can develop as responsible leaders and engage with their peers and cultivate appreciation for diversity and the betterment of our global society. Student Life and Campus Community is comprised of Student Organizations and Student Leadership Programs, Volunteer and Community Engagement, and Parent and Family Program.

Student Newspaper: CU Denver Sentry

Location: Tivoli Student Union, 345

Phone: 303-556-2535

Email: Please refer to website for more information

Website: www.cu-sentry.com (<http://www.cu-sentry.com>)

Since 1964, *The Sentry* has served as CU Denver's premier source of campus and community news for students and members of the university community. This paper has published every Wednesday and continues to do so in this new century providing the latest in campus news and events in the Denver community. Once known as *The Advocate*, as of 2016 The Sentry has once again revived the original name in efforts of getting back at our original history. *The Sentry* boasts a succinct team of more than 15 contributing members working under 4 editorial sections that help contribute to making the paper come to life each week. Student's serve at *The Sentry's* editors, writers, photographers, and visual designers. An editorial team composed of CU Denver students serves as the official representatives in expressing the CU Denver student body views and ideas. CU Denver may not have a journalism program, but *The Sentry* serves as the opportunity to expose students to the world of journalism. Learning practical skills in writing, editing, and publishing. *The Sentry* serves as a resource to the students, faculty, and staff and community members of Denver and the Auraria Campus. The print paper offers coverage of not only on-campus events and topics but as well as encouraging the community to find something to call their own in the city of Denver.

Student Organizations

Location: Tivoli Student Union 303

Phone: 303-315-7288

Email: Please refer to website for more information

Website: <https://www.ucdenver.edu/student-life/student-organizations> (<https://www.ucdenver.edu/student-life/student-organizations/>)

Get involved with a student organization, student government or the campus newspaper. CU Denver houses over 100+ student organizations whose focus range from academics to culture, faith/spirituality, community service, professional development, and everything in between! We help students register with student organizations, and provide services, information, education, support, and advising to assist with the development and strengthening of students and student groups. In addition, we provide multiple opportunities for students to engage in practicing and developing their leadership skills. Leadership programs include diverse leadership conferences including CO-Leads, a state wide multi-cultural leadership conference; and the Lynx Leadership Conference, a program designed to increase the leadership skills of CU Denver Students. We also provide leadership trainings that enhance the co-curricular experience on campus through programs such as Leadership On demand, a program designed for students involved in student organizations on campus; and Student Government Association, providing a voice for students on campus. We encourage students to take advantage of shared governance and increase the sense of community on campus through all of the leadership programs.

Student Leadership Programs

Location: Tivoli Student Union 303

Phone: 303-315-7288

Email: Please refer to website for more information

Website: <https://www.ucdenver.edu/student-life/leadership-programs> (<https://www.ucdenver.edu/student-life/leadership-programs/>)

CU Denver provides leadership education programs and workshops through the Office of Student Life and Campus Community, and Peer Advocate Leaders (PAL). Leadership education programs are designed to provide students with tools and skills to become confident leaders. Participation in leadership programs may also help students connect with each other, giving them an increased sense of belonging here at CU Denver.

- Learn to be a socially responsible leader
- Develop your career readiness competencies in the areas of critical thinking/problem-solving, teamwork/collaboration, leadership, and professionalism/work ethic
- Experience the rewards of peer mentorship

Our Summit Leadership Program (<https://ucdenver.presence.io/organization/summit-leadership-program/>) is open to all CU Denver students. To join the program (<https://ucdenver.presence.io/>), log into our CU Denver student engagement platform MyLynx. Members of the Summit Leadership Program receive information on leadership events, registration deadlines, and are invited to special events just for Summit members.

Student Life & Campus Community also coordinates programs and services to enhance student development and encourage students to lead an active campus life by providing opportunities for co-curricular involvement. Beyond leadership workshops & programs, our staff team supports leadership development through our work with student organizations, community service, campus speakers, leadership conferences, and a variety of campus programs.

TRIO Student Support Services & McNair Scholars

Location: Student Commons Building Ste 2011

Phone: 303-315-3550

Email: Please refer to website for more information

Website: <https://www.ucdenver.edu/trio/>

CU Denver TRIO Student Support Services (TRIO SSS) at helps first-generation, low-income students and students with disabilities reach their full potential and achieve academic success. We are a supportive academic community committed to student excellence and achievement. Student success is at the center of everything we do in.

The Ronald E. McNair Post-baccalaureate Achievement Program is one of seven federally funded programs under the TRIO umbrella that supports first-generation and low-income students.

Health & Wellness

Wellness is a priority for us. The Health and Wellness website (<https://www.ucdenver.edu/student/health-wellness/>) is dedicated to providing an exceptional and holistic wellness experience for all CU Denver students. Below are some of the ways that CU Denver supports health and wellness. To learn more about all of the health and wellness services at CU Denver, please visit our website.

Food Resources

CU Denver Food Pantry

Location: 3rd Level in the Lola and Rob Salazar Student Wellness Building

Phone: 303-315-4010

Email: foodpantry@ucdenver.edu

Website: <https://www.ucdenver.edu/wellness/matters/food-pantry/>

The Lynx Food Pantry is here to help students find more resources to fight food insecurity and lack of nutritious food. CU Denver students have access to free food and hygiene products. For more information about how to utilize the Lynx Food Pantry, hours, volunteering, needed items, and the Lynx Mobile Food Pantry, please visit our website (<https://www.ucdenver.edu/wellness/matters/food-pantry/>).

Mental Health Resources

Counseling Center

Location: Tivoli Student Union 454

Phone: 303-315-7270

Email: Please refer to website for more information

Website: <https://www.ucdenver.edu/counseling-center/>

The CU Denver Student and Community Counseling Center (SCCC) provides mental health counseling services to CU Denver Students as well as community members and Denver Public Schools (DPS) students and their families. Fee-paying students receive counseling sessions at no cost. Community members are charged a nominal fee for services. The counseling center provides strength-based culturally responsive mental health services focused on relationship, support, growth and solutions. The SCCC uses a brief, goal-directed counseling model that helps students achieve their academic and personal goals. There are no fees for counseling sessions. We also offer an array of other services, such as group therapy, drop-in workshops, and wellness-promotion activities.

If you would like to learn more about services offered and/or would like to schedule an appointment, please do give us a call at 303-315-7270.

The Phoenix Center

Location: Tivoli Student Union 227

Phone: 303-315-7250

Email: info@thepca.org

Website: <https://www.thepca.org/>

The Phoenix Center at Auraria (PCA) serves students, staff, and faculty associated with University of Colorado Denver, Community College of Denver, and Metropolitan State University Denver. The PCA provides **free and confidential** resources and assistance to survivors of interpersonal violence (relationship violence, sexual violence, and stalking), as well as their friends, families, and concerned others. The PCA support services include academic advocacy, assistance reporting to the school and/or law enforcement at the survivor's request, safety planning, court accompaniment, emotional support, and more. The PCA also provides campus education and training, awareness raising events, and campus policy guidance.

To learn more about the services provided by PCA, please visit our website (<https://www.thepca.org/>).

Safety & Support

The Office of Equity

Location: Lawrence Street Center 12th Floor

Phone: 303-315-2567

Email: equity@ucdenver.edu

Website: <https://www1.ucdenver.edu/offices/equity/>

The Office of Equity's stated mission is to strive to stop, prevent, and remedy discrimination, harassment, sexual misconduct, and any related retaliation; provide education, training and outreach; design policies and procedures to make our campus safer and more inclusive; and ensure all individuals are treated with dignity, compassion, and respect.

The Sexual Misconduct Policy prohibits:

- Sexual Assault: Rape, Fondling, Statutory Rape, and Incest
- Dating Violence
- Domestic Violence
- Sexual Exploitation
- Stalking: Title IX Stalking and Stalking
- Sexual Harassment: Title IX Sexual Harassment Quid Pro Quo, Sexual Harassment Quid Pro Quo, Title IX Hostile Environment, & Hostile Environment

The Nondiscrimination Policy prohibits discrimination or harassment on the basis of:

- Race
- Color
- National Origin
- Sex
- Gender Identity
- Gender Expression
- Sexual Orientation
- Pregnancy

- Disability
- Age
- Creed
- Religion
- Veteran Status
- Political Philosophy
- Political Affiliation

To report an incident of sexual misconduct, discrimination, harassment, or retaliation or to request a training, please contact the Office of Equity at:

- **Phone number:** 303-315-2567
- **Email address:** equity@ucdenver.edu
- **Office address:** Lawrence Street Center, 12th floor, Denver, CO 80204
- **Mailing address:** Campus Box 134, P.O. Box 173364, Denver, CO 80217-3364.
- **Or visit our website for an online report and more information about our policies, procedures, trainings, and other resources:** <https://www1.ucdenver.edu/offices/equity> (<https://www1.ucdenver.edu/offices/equity/>)

Dean of Students

Location: 900 Auraria Parkway #309

Phone: 303-315-7310

Email: DeanOfStudents@ucdenver.edu

Website: <https://www.ucdenver.edu/student/health-wellness/dean-of-students> (<https://www.ucdenver.edu/student/health-wellness/dean-of-students/>)

The Dean of Students Office supports the CU Denver community by advocating for students, addressing concerns, and promoting wellness and accountability. In partnership with students, faculty, and staff, we foster an environment rich in student success and opportunities for personal growth, while promoting a diverse and inclusive campus community. We serve our talented students by advocating for student needs, addressing issues of wellness and safety, and supporting all students in times of challenge and crisis. We encourage all initiatives that strengthen our campus and community.

Campus Assessment, Response and Evaluation (CARE) Team

Location: Tivoli Student Union, Suite 227

Phone: 303-315-7306

Email: shareaconcern@ucdenver.edu

Website: <https://www.ucdenver.edu/student/health-wellness/care-team> (<https://www.ucdenver.edu/student/health-wellness/care-team/>)

Submit a concern at: https://cm.maxient.com/reportingform.php?UnivofColoradoDenver&layout_id=1 (https://cm.maxient.com/reportingform.php?UnivofColoradoDenver&layout_id=1)

The Campus Assessment, Response & Evaluation (CARE) Team is committed to improving campus safety and student success at both the CU Denver | Anschutz Medical Campus.

The CARE Team was created to address the health and safety needs of students and the campus community. We assess whether individuals pose a risk to themselves or others and intervene when necessary. More generally, we identify and provide assistance to those in need.

The team takes a preventative approach to risk assessment by offering resources, referrals, and support to both the concerning individual and those impacted by their behavior.

The Office of Case Management

Location: Tivoli Student Union 309

Phone: 303-315-7306

Email: csm@ucdenver.edu (csm@ucdenver.edu)

Website: <https://www.ucdenver.edu/student/health-wellness/case-management> (<https://www.ucdenver.edu/student/health-wellness/case-management/>)

The Office of Case Management was established to better serve the needs of the campus community and struggling students. Case management services include, but are not limited to, providing intervention, advocacy, resources and referrals, as well as follow-up services for students who are experiencing significant difficulties. Case managers support students struggling to navigate the university system, students with current and emerging mental or physical health issues, and students experiencing issues adjusting to academic and social life.

Case Managers coordinate student services and provide referrals to the appropriate resources on campus such as the Office of Community Standards and Wellness, Office of the Registrar, Student and Community Counseling Center, Office of Financial Aid, Disability Resources and Services, Student Mental Health Services, and student advocacy offices.

The Office of Student Conduct and Community Standards

Location: Tivoli Student Union 309

Phone: 303-315-7311

Email: StudentConduct@ucdenver.edu

Website: <http://www.ucdenver.edu/life/services/standards/Pages/default.aspx>

We serve the university community by meeting the developmental and educational needs of students related to community expectations, civility and respect for self and others. We support community members with conflict management and resolution, and respond to inappropriate and threatening behaviors. We provide student-centered educational services, which promote personal development and individual responsibility. We strive to create a dynamic, open and just environment where civility, cultural competence and learning are expected and celebrated.

Campus Safety

Auraria Police Department

Location: 1201 5th Street Suite 110, Denver, CO 80217

Police Dispatch Number: 303-556-5000

Website: <https://www.ahec.edu/services-departments/police> (<https://www.ahec.edu/services-departments/police/>)

CAMPUS POLICE MISSION

The Auraria Campus Police Department is committed to enhancing the quality of life on the Auraria Campus by protecting life and property, and providing a wide range of services to prevent crime and resolve problems.

Services (*The Auraria Campus Police Department provides campus services 24 hours a day, 7 days a week.*)

- Crime prevention programs
- Informational services

- Police support to campus staff
- Night escorts to your vehicle
- Security patrols, bicycle patrols, foot patrols
- Vehicle unlocks
- Emergency response (Emergency Phone Map: <http://www.ahec.edu/campusmaps/>)
- Timely Notification Bulletin for the Auraria Campus
- Immediate notice of crimes affecting the Auraria Campus.

The Auraria Handivan Service is offered Monday through Thursday 7:00 am-10:00 pm and on Friday's from 7:00 am-6:00 pm. Also, take advantage of Auraria's Nightrider escort service. It will take you to any building or parking lot on campus Monday through Thursday, Sundown to 10:00pm. The wait time is usually no longer than 10 minutes. To arrange for the Nightrider, contact the Auraria Parking Office at (303) 556-2001. If the Nightrider is not running, contact the Auraria Campus Police Department at (303) 556-5000 to arrange for an escort to your car.

The Emergency Notification System (ENS) tool provided by the University of Colorado Denver (CU Denver) for students, faculty and staff provides timely life-safety alerts. You are able to receive these alerts via text, voice and email messaging. Your CU Denver email address has already been added to this system. If you would receive emergency alerts on your cell phone, make sure that you enter your cell phone number into the PROFILE section of your student or employee portal at <https://my.cu.edu/>. **Identify the phone type as a "Cellular" device and check it as the "Preferred" number.**

Wellness

Location: Lola & Rob Salazar Student Wellness Center
1355 12th St
Phone: 303-315-WELL (9355)
Email: lynxwellness@ucdenver.edu
Website: <https://www.ucdenver.edu/wellness/>

Our Purpose: To promote a culture of belonging through innovative spaces, programs & experiences.

Our Vision: To make wellness a priority for every person in the CU Denver community. To do wellness differently.

Guiding Principles:

7 Dimensions of Wellness

Innovation and creative thinking
Equity, diversity and inclusion
Learning, leadership, service and citizenship
Student development
Spirit and fun

Club Sports

Location: Lola & Rob Salazar Student Wellness Center
Phone: 303-315-9355
Email: lynxwellness@ucdenver.edu
Website: <https://www.ucdenver.edu/wellness/sports/club-sports/>
(<https://www.ucdenver.edu/wellness/sports/club-sports/>)

Club Sports is a program designed to provide students with the opportunity to engage in team sports in a friendly and competitive environment. The purpose of the program is to unite individuals with a shared interest in sports, develop lasting friendships, and build community among students across campus, all while increasing their overall well-being through physical activity. Any student who is enrolled in at least 1 credit hour and is paying the Club Sports fee may participate

in Club Sports. Students can pick from a variety of sports to participate in and have the chance to serve in a leadership position during their time. All Club Sports serve under the Wellness and Recreation Services department and indoor practice spaces are housed in the Lola and Rob Salazar Student Wellness Center. Club Sports policies and guidelines can be found in the Club Sports Manual.

Student Health Insurance Office

Location: Plaza Building, Suite 150
Phone: 303-615-9999
Email: Please refer to website for more information
Website: <https://www.msudenver.edu/healthcenter/>

Hours: Monday- Thursday: 8:00am- 5:00pm, Friday 8:00am- 3:00pm

The Student Health Insurance Office strongly encourages all students to have adequate health insurance coverage. The university health plan is designed to coordinate services with the Health Center at Auraria to provide quality health care at the lowest possible cost. **For domestic students, the university health plan is voluntary.** International students with F-1 and J-1 student visas are required to carry the health insurance plan provided by the university. For more information for international students, please visit: <https://healthcenter1.com/international-health-insurance-requirement/>

Housing, Dining, and Parking

There are a variety of housing, dining, and parking choices available at CU Denver. To learn more, check out the information below.

Housing and Dining

Location: 318 Walnut St
Phone: 303-315-5272
Email: Housing@ucdenver.edu
Website: <https://www.ucdenver.edu/housing-and-dining/home> (<https://www.ucdenver.edu/housing-and-dining/home/>)

Although CU Denver is located in the heart of the city, we've always operated with the needs of college students in mind. Whether you're looking for on-campus housing and dining close to classrooms or wish to explore other off-campus options in Denver, we've got the resources to help you find the perfect environment.

Housing

Lynx Crossing Residence Hall

Website: <https://www.ucdenver.edu/housing-and-dining/lynx-crossing>
(<https://www.ucdenver.edu/housing-and-dining/lynx-crossing/>)

Lynx Crossing is conveniently close to CU Denver and the heart of the city, so you're never far away from your classes or fun. Lynx Crossing offers a wide range of floor plans and other features you can choose from at a fair price for students.

City Heights Residence Hall

Website: <https://www.ucdenver.edu/housing-and-dining/city-heights>
(<https://www.ucdenver.edu/housing-and-dining/city-heights/>)

CU Denver's First-Year student residential building with dining and campus services opening Fall 2021. The facility includes two connected building components: a six to seven-story residential tower and a three-story Learning Commons—the future home to student life services and faculty development services.

Off-Campus Housing

Off-Campus Housing Database Website: offcampushousing.ucdenver.edu (<https://offcampushousing.ucdenver.edu/>)

The Office of Commuter Services supports students with commuting resources and an off-campus housing database that can be accessed through the link listed above.

Dining

The Auraria Campus offers multiple dining choices and programs for the CU Denver community. To learn more about dining choices, please visit the following websites:

- Residence Hall Dining (<https://lynxdining.sodexomyway.com/>)
- Auraria Campus Dining (<https://www.ahec.edu/campus-info/food/>)
- Discounted Dining in Denver (<https://www.ucdenver.edu/student-finances/discounts-deals/food-dining/>)

Transportation and Parking

Website: <https://www.ucdenver.edu/life/living-on-around-campus/student-transportation-parking> (<https://www.ucdenver.edu/life/living-on-around-campus/student-transportation-parking/>)

A degree should help you get somewhere, and how you get to campus to earn that degree is an important thing to consider. CU Denver students have several options for traveling to and from campus safely and efficiently. CU Denver is conveniently located downtown near multiple light rail stations and bus stops. Bicycle commuting is also a popular option, given Denver's sunny weather, active culture, and miles of protected bike lanes. If you prefer to drive, there are parking spots available, too.

For more information about parking and transportation options, please visit our website (<https://www.ucdenver.edu/life/living-on-around-campus/student-transportation-parking/>).

Other Student Resources

Feeling like you belong and getting support when you need it—that's what's going to help you reach your goals. As a member of the CU Denver Lynx community, you have access to student services that can support you in so many ways.

Bursar's Office

Location: 5th Floor Student Commons Building, 1201 Larimer Street Ste 5123

Customer Service Phone Center: 303-315-1800

E-mail: bursar@ucdenver.edu

Website: <https://www.ucdenver.edu/student-finances/billing-payments> (<https://www.ucdenver.edu/student-finances/billing-payments/>)

When a student begins researching higher education institutions, tuition is often the first stop. The Bursar's Office provides services in the following areas.

- Application Fees Payments
- College Opportunity Fund
- Departmental Deposit Transactions
- Tuition and Fee Payments
- Refunds and Direct Deposits
- Student Account Reconciliation

- Third-Party Billing
- Student Balance Outreach
- Past Due Tuition Collection
- Tax Offsets

For more information for undergraduate students, please visit the Student Finance (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/>), Tuition and Fees (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/tuition-fees/>), and Billing and Payments (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/billing-payments/>) sections in the Undergraduate Catalog.

For more information for graduate students, please visit the Student Finance (p. 46), Tuition and Fees (p. 49), and Billing and Payments (p. 49) sections in the Graduate Catalog.

Financial Aid and Scholarships

Location: 5th Floor Student Commons Building, 1201 Larimer Street Ste 5105

Phone: 303-315-1850

Email: FinancialAid@ucdenver.edu

Website: <https://www.ucdenver.edu/student-finances/financial-aid> (<https://www.ucdenver.edu/student-finances/financial-aid/>) and <https://www.ucdenver.edu/student-finances/scholarships> (<https://www.ucdenver.edu/student-finances/scholarships/>)

While the world of financial aid can seem intimidating, if you break it down and put in the work, making financial aid work for you will be the first step toward opening a door to your future. The Financial Aid and Scholarships Offices provides services in the following areas.

- How to apply for financial aid
- Free Application for Federal Student Aid (FAFSA) <https://fafsa.ed.gov/>
- Work-study and student employment opportunities
- Grant and student loan information
- Special circumstances, academic progress or financial hardship appeals
- Scholarships Information

For more information for undergraduate students, please visit the Student Finance (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/>), Financial Aid (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/financial-aid/>), and Scholarships (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/scholarships/>).

For more information for graduate students, please visit the Student Finance (p. 46), Financial Aid (p. 47), and Scholarships (p. 48).

Learning Resources Center

Location: Student Commons Building, Suite 2105

Phone: 303-315-3531

Email: tutorialservices@ucdenver.edu

Website: <https://www.ucdenver.edu/learning-resources-center> (<https://www.ucdenver.edu/learning-resources-center/>)

The CU Denver Learning Resources Center is designed to promote student success, retention, and graduation in a supportive, vibrant and inclusive academic setting. Our services are available to currently enrolled CU Denver undergraduate and graduate students and include

free services such as CRLA certified tutoring, Supplemental Instruction (SI), Academic Development Workshops, Student Success Seminars, academic coaching, Conversation Groups, and English for Speakers of Other Languages (ESOL) support.

Lynx Central

Location: Student Commons Building, Suite 1107

Phone: 303-315-5969 (303-315-LYNX)

Email: lynx.central@ucdenver.edu

Website: <https://www.ucdenver.edu/student> (<https://www.ucdenver.edu/student/>)

Office Hours: Monday-Friday, 8am-5pm

Lynx Central provides all prospective and current CU Denver students with support throughout the admissions and enrollment process including help with financial aid and scholarships along with registration. Lynx Central staff can also help with general campus questions. For more information, check us out at <https://www.ucdenver.edu/student> (<https://www.ucdenver.edu/student/>).

Office of Information Technology

Location: Lawrence Street Center, 1350

Phone: 303-724-4357 (4-HELP)

Email: oit-servicedesk@ucdenver.edu

Website: <https://www1.ucdenver.edu/offices/office-of-information-technology> (<https://www1.ucdenver.edu/offices/office-of-information-technology/>)

The Office of Information Technology (OIT) works in partnership with academic and business units to provide technical support to meet the needs of students, faculty and staff at the CU Denver | Anschutz Medical Campus. OIT serves as the primary source of campus wide technology services (<https://www1.ucdenver.edu/offices/office-of-information-technology/services/>) in partnership with school, college and department IT professionals.

Services range from providing wireless networks, email (<http://myemail.ucdenver.edu/>) and university passwords (<https://passport.ucdenver.edu/passwordreset/>), software (<https://www1.ucdenver.edu/offices/office-of-information-technology/software/>), desktop services, security (<https://www1.ucdenver.edu/offices/office-of-information-technology/software/how-do-i-use/cu-secure-and-multi-factor-authentication/>), and systems development, to protecting the integrity of the university's data and administrative systems. Additional resources are available from the student technology guide (<https://www1.ucdenver.edu/offices/office-of-information-technology/get-help/cu-denver-student/>) and technology tools and software (<https://www1.ucdenver.edu/offices/office-of-information-technology/get-help/working-remotely/tools-and-software/>) remote learning and working webpages. Please contact the OIT service desk (<https://www1.ucdenver.edu/offices/office-of-information-technology/get-help/>) for assistance with a service or help troubleshooting technology issues.

OIT also provides student computing services to currently enrolled students within the computer labs (<https://www1.ucdenver.edu/offices/office-of-information-technology/get-help/student-labs/>) and study spaces located in the North Classroom 1206, Student Commons Building 2nd floor, and the Tivoli 241. The computer labs have Macintosh and Windows-based computers with internet access, as well as printing, scanning, and copying availability with assistance from a lab advisor. For more information about these services, visit the student work

spaces and computer labs webpage (<https://www1.ucdenver.edu/offices/office-of-information-technology/get-help/student-labs/>) or email StudentLabs@ucdenver.edu.

Office of the Registrar

Location: Student Commons Building, Suite 5005

Telephone: 303-315-2600

Fax: 303-315-2550

E-mail: registrar@ucdenver.edu

Website: www.ucdenver.edu/Registrar (<http://www.ucdenver.edu/Registrar/>)

CU Denver offers students a completely online system of planning their schedules and registering for classes. As a student, you are responsible for knowing the deadlines, rules, regulations, course loads, prerequisites and policies of the university, as well as those of the college or school in which you are enrolled, all of which is provided within this online catalog. Please refer to the Academic Policies section for more specific information related to records and registration.

Students should review the sections of this catalog that describe in detail the academic programs available at the Denver Campus.

The registrar's office will send an e-mail message to the student's university-assigned e-mail address, inviting the student to register, including registration information and a registration time assignment. Registration is by time assignment only. Students may register via the web on or after their assigned time.

For more information for undergraduate students, please visit the Records and Registration (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/>) section in the Undergraduate Catalog.

For more information for graduate students, please visit the Records and Registration (p. 50) section in the Graduate Catalog.

Ombuds Office

Location: Lawrence Street Center Building, Room 1003

Phone: 303-315-0046

Contact: Teresa Ralicki; **Email:** Terese.ralicki@ucdenver.edu

Website: www.ucdenver.edu/ombuds (<http://www.ucdenver.edu/ombuds/>)

The Ombuds Office is a **safe**, confidential, and **nonbiased** resource that members of the University of Colorado Denver | Anschutz Medical Campus can approach to discuss, voice, and clarify any university-related concerns. We are a neutral third-party resource that is available to hear individual complaints and help sort out and **identify options** for resolving those concerns.

The Ombuds Office is well-trained in listening, facilitating, recommending, mediating, and coaching. Each individual on our team is a member of the International Ombudsman Association and are **Certified Organizational Ombudsman Practitioners**.

We even offer trainings and seminars for groups and departments to help learn communication skills, conflict management, and effective team building.

Communications with the Ombuds Office may begin with a phone call, e-mail, letter, or visit. Please contact our office (<https://www1.ucdenver.edu/offices/ombudsoffice/>) to make an appointment.

Veteran & Military Student Services

Location: Tivoli Student Union 124

Phone: 303-315-7300

Email: vmss@ucdenver.edu

Website: <https://www.ucdenver.edu/veterans> (<https://www.ucdenver.edu/veterans/>)

Veteran & Military Student Services (VMSS) is the initial contact point for student active service members, veterans and their families attending CU Denver. The main priority of the office is to verify U.S. Department of Veterans Affairs education benefit certification for eligible students, ensuring that each student meets the Veterans Administration requirements for attendance, course load, content, as well as all other regulations necessary to receive educational benefit payments. This office assists students with filling out Veteran Affairs paperwork and in solving problems associated with the receipt of Veteran Affairs related educational benefits. The VMSS provides student peer to peer mentoring, transition assistance into higher education, scholarships, mental health services that are specific to the military and transition issues, and career preparation through the Boots to Suits Program. The office also serves as a liaison for numerous campus and community resources.

Writing Center

Location: North Classroom 4014

Phone: 303-315-7355

Email: writing.center@ucdenver.edu

Website: <https://clas.ucdenver.edu/writing-center/>

The Writing Center at CU Denver is a free resource available to all university students who wish to improve as writers. Services include in-person and online one-on-one appointments; an asynchronous Graduate Drop Box for graduate students; an asynchronous After Hours Drop Box for all students; workshops on a variety of topics (for example: citation, literature reviews, C.V.s, and more); and downloadable handouts, podcasts, and videos. Professional Writing Consultants will work on any type of writing and any aspect of the writing process, including (but not limited to) idea-generation, organization, thesis development, source usage, and grammar. Students bring in documents ranging from resumes, personal statements, and research essays to theses, rhetorical analyses, and grant applications. All writing is welcome. Interested students can schedule appointments (required) online and get more information (hours, directions, etc.) about each of our 9 locations/services for students right from the homepage (<https://clas.ucdenver.edu/writing-center/>):

- CU Denver: NORTH 4014
- CU Anschutz: HSL 1204
- CU South Denver: Student Commons, 2nd floor, Liniger Building
- Auraria Library: Knowledge Market, 1st floor
- Business School: Cordillera Conference Room, 1st floor
- Campus Village at Auraria (residents only): Cyber Café, 1st floor
- Online (real-time) consultations
- An asynchronous Graduate Drop Box for graduate students
- An asynchronous After Hours Drop Box for all students

UNIVERSITY AND CAMPUS POLICIES

University System Policies

Phone: 303-860-5711

Website: <https://www.cu.edu/ope> (<https://www.cu.edu/ope/>)

The University of Colorado System Office of Policy and Efficiency (<https://www.cu.edu/ope/>) - with input from system and campus policy owners - develops, oversees and maintains the University's system wide policy-making process; facilitates the development, review, approval, and maintenance of University-wide policies.

Policies include:

- Intercampus Enrollment and Tuition
- Adopting Standards for Intercampus Transfer of Credits
- Sexual Misconduct, Intimate Partner Violence, and Stalking
- Digital Accessibility

Campus Policies

Phone: 303-315-2102

Email: policy@ucdenver.edu

Website: <http://www.ucdenver.edu/policies> (<http://www.ucdenver.edu/policies/>)

The Campus Policy Office resides in the Provost Office. This office oversees all development, coordination, management, rescissions and archives for all CU Denver and CU Anschutz campus policies.

Policies include:

- Academic Standing for Undergraduates
- Academic Internships
- Denver Campus Enrollment and Billing
- Four-Year Graduation Guarantee
- Grade Forgiveness
- International Travel Policy for Students
- Transferring Undergraduate Credit

Academic Integrity And Discipline Policies

CU Denver defines academic misconduct and sets forth a uniform process for handling allegations of student academic misconduct at CU Denver. As members of the CU Denver community, students are expected to know, understand, and comply with the standards of the University and to accept the responsibility to maintain the highest standards of intellectual honesty and ethical conduct in completing all forms of academic work at the university. In particular, students must refrain from academic misconduct, defined in the policy as

1. a student's use of unauthorized assistance with intent to deceive an instructor or other person who is assigned to evaluate the student's work in meeting course and degree requirements, or
2. actions that interfere with the ability of the instructor to fairly judge the work of the student or other students.

Academic integrity standards assist in promoting an academically sound, fair, and respectful community. CU Denver views the Academic Integrity process set forth in this policy as a learning experience that can result in growth and personal understanding of one's responsibilities and privileges within both the CU Denver community and the greater community. All students must adhere to these standards. Students who allegedly violate these standards and commit academic misconduct will be subject to the procedures described in this policy. Academic dishonesty is academic in nature, and students are encouraged to contact their academic advisor for details of the campus policy and procedures centered on the academic integrity policy.

Forms of Academic Dishonesty (Refer to Campus Policy 7050 for full policy (<https://www.ucdenver.edu/docs/librariesprovider284/default-document-library/7050.pdf?sfvrsn=2ae2bcb9>))

Students are expected to know, understand and comply with the ethical standards of the university. Academic dishonesty is defined as a student's use of unauthorized assistance with intent to deceive an instructor or other such people who may be assigned to evaluate the student's work in meeting course and degree requirements. Examples of academic dishonesty include, but are not limited to the following:

1. *Plagiarism*

Plagiarism is the use of another person's distinctive ideas or words without acknowledgment. The incorporation of another person's work into one's own requires appropriate identification, regardless of the means of appropriation.

2. *Cheating*

Cheating involves the possession, communication or use of information, materials, notes, study aids or other devices not authorized by the instructor in an academic exercise or communication with another person during such an exercise for the purpose of obtaining or providing unauthorized information or materials.

3. *Fabrication and Falsification*

Fabrication involves inventing or counterfeiting information, i.e., creating results not obtained in a study or laboratory experiment. Falsification, on the other hand, involves the deliberate alteration or changing of results to suit one's needs in an experiment or other academic or creative exercises.

4. *Multiple Submissions*

This is the submission of academic work for which academic credit has already been earned, when such submission is made without instructor authorization.

5. *Misuse of Academic Materials*

The misuse of academic materials includes but is not limited to the following: stealing or destroying library or reference materials, computer programs, another student's notes or materials or illegitimate possession of examination materials, forgery, falsification of university documents.

6. *Complicity in Academic Dishonesty*

Complicity involves knowingly allowing or contributing to another's academic misconduct.

School/College Specific Policy

Business School (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/business-school/#policiestext>)

College of Engineering, Design and Computing (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#policiestext>)

College of Liberal Arts and Sciences (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#policiestext>)

Disruptive Student Behavior

Students are required to adhere to the behavioral standards listed in the Student Code of Conduct and the course syllabus and to refrain from disrupting classes and other academic settings.

What Constitutes Disruption? "Disruption," as applied to the academic setting, is defined as behavior a reasonable faculty member would view as interfering with normal academic functions (teaching, learning, and research). Examples include, but are not limited to: persistently speaking without being recognized, persistently interrupting other speakers, behavior which distracts the class from the subject matter or discussion, personal insults to the faculty member or other students, abusive behavior (as identified in the CU Denver Student Code of Conduct), refusal to comply with faculty direction, or verbal or physical threats.

Disagreement with the course instructor or other students, during times when the instructor permits open discussion, is not in itself disruptive behavior and is not necessarily prohibited.

Some students engaging in disruptive behavior may have developmental or other related disabilities. Although such students may be considered to have disabilities and to have protections under the Americans with Disabilities Act and the Rehabilitation Act, these students are held to the same standards of conduct and behavior as any other student. Faculty are asked to refer students to any of the resources listed at the end of this policy statement as appropriate.

Where this policy conflicts with the Student Code of Conduct, this policy will prevail with regard to disruptive behavior in the academic setting.

Please refer to Policy 7004 for the full policy (https://www.ucdenver.edu/docs/librariesprovider284/default-document-library/7004.pdf?sfvrsn=4df9bcb9_0).

Email Account

Email is an official means for communication within CU Denver.

Therefore, CU Denver has the right to send communications to students/staff/faculty via email and the right to expect that those communications will be received and read in a timely fashion.

FERPA: Family Educational Rights and Privacy Act

FERPA is a federal privacy law that protects students' educational records. Under this law, students have three primary rights:

- Inspect and review their education records.
- Seek to amend incorrect education records.
- Have some control over the disclosure of information from their education record.

FERPA directory information is information contained in a student's education record that generally would not be considered harmful or an invasion of privacy if disclosed. Under current CU Denver policy, the following information is designated as directory information:

- Student name. If provided, a preferred name will be used when there is not a documented business or legal reason to provide a student's primary name. Students may also select a diploma name for graduation and commencement materials.
- Hometown (city, state).
- Campus email address.¹
- Dates of attendance.
- Previous educational institutions attended.
- School/college or division of enrollment.
- Majors, minors and field of study.
- Classification level (e.g., freshman, sophomore, graduate student).
- University-recognized honors and awards.
- Degree status (e.g. expected graduation date and/or conferral dates/terms).
- Enrollment status.
- Employment related to student status (e.g. teaching assistant, resident assistant or work-study) and dates for positions held.
- Participation in officially recognized activities/sports, including height and weight of athletes.
- Photos and videos taken or maintained by the university.

¹ Campus email addresses are only disclosed to requestors who agree not to use them for solicitation.

Although these items are designated by CU Denver as directory information, only a limited amount of this information is routinely disclosed by CU Denver university officials. The university retains the discretion to refuse disclosure of directory information if it believes such disclosure would be an infringement on student privacy rights.

Students may ask the University not to publicly disclose directory information. Be aware, however, if you are seeking employment, the Registrar's Office cannot release your enrollment, degree status or major to anyone unless you come to the Registrar's Office with a photo ID.

Forms to prevent disclosure of directory information can be obtained at the Registrar's Office, located in the Student Commons Building, or via the Registrar's website at www.ucdenver.edu/registrar (<http://www.ucdenver.edu/registrar/>).

Information that is never released without your consent includes grades, tuition/fees owed, financial aid, etc. If you would like to give permission to someone else to have access to that information, you can submit a Release of Confidential Information Form to the Office of the Registrar. This form also must be submitted in person.

More information about FERPA can be found in the University Catalog. If you have questions regarding your rights under FERPA, please contact the Office of the Registrar.

Denver Campus:

Phone: 303-315-2600

Fax: 303-315-2550

Email: registrar@ucdenver.edu

Website: www.ucdenver.edu/registrar (<http://www.ucdenver.edu/registrar/>)

Student Bill of Rights

The University of Colorado Denver subscribes to the Student Bill of Rights as defined in 23-1-125 of the Colorado Revised Statutes. Students enrolled in public institutions of higher education shall have the following rights:

1. Students should be able to complete their associate of arts and associate of science degree programs in no more than sixty credit hours or their baccalaureate programs in no more than one hundred twenty credit hours unless there are additional degree requirements recognized by the commission;
2. A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years, unless there are additional degree requirements recognized by the commission;
3. Students have a right to clear and concise information concerning which courses must be completed successfully to complete their degrees;
4. Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;
5. Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;
6. Students have a right to know if courses from one or more public higher education institutions satisfy the students' degree requirements;
7. A student's credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferrable.

Student Code of Conduct

The complete Code of Conduct, including a detailed explanation of the conduct process and sanctions, can be found online on the Student Conduct and Community Standards website (<https://www.ucdenver.edu/student/health-wellness/student-conduct/>) with the full policy here (https://www1.ucdenver.edu/docs/librariesprovider122/health-and-wellness/cu-denver-student-code-of-conduct--final-with-suspension-update-9-16-20.pdf?sfvrsn=4d0ea7b9_2).

You can also visit the Student Conduct and Community Standards office in the Tivoli Student Union Room 309.

Article 7, Part B of the Laws of the Regents (<https://www.cu.edu/regents/regent-laws/>) requires each campus to develop a student code of conduct and related processes. The Dean of Students is the designated authority to establish and enforce the CU Denver Student Code of Conduct. Any questions regarding interpretation of this document or any of its provisions should be directed to the Dean of Students or their designee for final determination.

The Dean of Students and/or their designee shall appoint student Conduct Educators and Appeal Readers. The Director of Student Conduct and Community Standards or their designee shall determine which Conduct Educator shall be assigned to hear each matter.

The Dean of Students and/or their designee shall develop policies for the administration of the student conduct process and procedural rules. Decisions made by a Conduct 5 Educator shall be final, pending the appeal process. Proceedings initiated under this policy are separate from civil or criminal proceedings that may exist in connection to the same incident. Investigations or conduct proceedings by the university may not be postponed while criminal or civil proceedings are pending, unless otherwise determined by the assigned Conduct Educator.

The CU Denver Student Code of Conduct shall apply to a student's behavior that violates local, state, federal, or university laws, policies, or regulations, and as a result can adversely affect the university community or damages the institution's reputation or relations with the greater community. A student's behavior may be addressed through the student conduct process if it occurs on campus, off campus, or at university sponsored programs or activities, including, but not limited to, study abroad programs, alternative break trips, and student organization sponsored events and programming.

The CU Denver Student Code of Conduct shall apply to a student/campus organization's behavior that adversely affects the university community, violates local, state, federal, or university laws, policies, or regulations, or damages the institution's reputation or relations with the greater community. A student/campus organization's behavior may be addressed through the Organizational Conduct Process if it occurs in connection with a campus organization. An organization's involvement in the Organizational Conduct Process does not preclude one or more individuals from being held accountable through the student conduct process for behavior connected to the same incident.

Prohibited Student Behavior

The following has been developed in accordance with CU Regent Law 7.B.1. and Regent Policy 7.B.1. All behaviors contained in this Student Code of Conduct are subject to the Student/Organizational Conduct Process.

1. Abusive Behavior: Engaging in any act or acts that, based on a reasonable person standard, would cause substantial emotional distress to the impacted party or parties, including, but not limited to:
 - a. Verbal abuse
 - b. Intimidation
 - c. Coercion
 NOTE: This policy should not be construed, and will not be enacted, to deny any student the right of free speech and expression.
2. Aiding and Abetting: Attempting to commit, aid, abet, or incite others to engage in behavior prohibited by law, the CU Denver Student Code of Conduct, the CU Housing & Dining Handbook, or other AHEC or university policies
3. Alcohol: Violating any local, state, federal, or university law, policy, or regulation pertaining to alcohol, including, but not limited to:
 - a. Manufacturing, selling, or providing alcohol to an individual(s) under the age of 21
 - b. Possessing or using alcohol while under the age of 21
 - c. Using alcohol on campus, regardless of age, with the exception of responsible use at an authorized restaurant or event and in compliance with the CU Denver Housing & Dining policy
 - d. Being in the presence of alcohol or alcohol use on campus when knowledge of the alcohol or alcohol use is reasonable with the exception of responsible use at an authorized restaurant or event and in compliance with the CU Denver Housing & Dining policy
 - e. Using or possessing alcohol in the presence of an individual(s) under the age of 21 on campus, with the exception of responsible use at an authorized restaurant or event

- f. Attending classes or university functions under the influence of alcohol
4. Bullying: Engaging in severe aggressive behavior likely to intimidate or intentionally harm, control, or diminish another person, physically or mentally
5. Cyberbullying: Tormenting, threatening, harassing, humiliating, embarrassing, or otherwise targeting of another person by an individual using the internet, interactive and digital technologies, or mobile telephones
6. Disrupting Emergency Response: Engaging in any act(s) that interfere with, obstruct, or disrupt the response or official action of an emergency responder, including, but not limited to:
 - a. Interfering with the performance of police or fire department duties
 - b. Resisting arrest
 - c. Failing to abide by the directions of a police officer
7. Disruption: Materially and substantially interfering with, obstructing, or disrupting a normal university activity, including, but not limited to:
 - a. Behavior resulting in injury to persons or damage to property on the campus
 - b. Interference, obstruction, or disruption of the freedom of movement of students or other members of the university community and their guests
8. Driving Under the Influence: Driving under the influence of, or while one's ability is impaired by, alcohol, marijuana, or other illicit or prescription drugs
9. Failure to Comply: Failing to comply with the direction of employees of CU Denver, CU Denver Housing & Dining, and AHEC who are performing their duties
10. Failure to Report: Failing to report the behavior of another individual/student when that behavior may be a violation of any local, state, federal, or university law, policy, or regulation including, but not limited to, the CU Denver Student Code of Conduct, the CU Denver Housing & Dining Handbook, or other AHEC or university policies
11. False Information: Providing false or misleading information, including, but not limited to:
 - a. Making a false statement to emergency responders or an employee of CU Denver, CU Denver Housing & Dining, and AHEC who is performing their duties
 - b. Using a false identification or the identification of another to gain entrance to a facility or business
 - c. Forging, altering, falsifying, or misusing documents or records
 - d. Using or possessing forged, altered, or false documents or records
12. Fighting: Assaulting another person, being involved in a fight or brawl, or physically harming another person
13. Fire Safety: Violating local, state, federal, or campus fire policy, including, but not limited to:
 - a. Intentionally or recklessly causing a fire
 - b. Tampering with, impairing, disabling, or misusing fire protection systems such as smoke detectors, fire extinguishers, sprinklers, and alarms
 - c. Failing to evacuate a university controlled building during a fire alarm
 - d. Improper use of university safety equipment
14. Hazing: Engaging in or planning any act, typically associated with belonging to a group of peers, which may produce, or is intended to produce, mental or physical discomfort, embarrassment, harassment, or ridicule, or any acts which are humiliating, intimidating, or demeaning, or that endanger the health and safety of another person, including, but not limited to:
 - a. Paddling in any form
 - b. Inducement of excessive fatigue
 - c. Required exercise inconsistent with the mission of the organization, team, or group
 - d. Physical or psychological shocks
 - e. Personal servitude
 - f. Forced or coerced consumption
 - g. Forced or coerced engagement in public stunts, morally degrading or humiliating games and activities, drinking games, late work sessions, other unorganized activities, and other obligations that interfere with scholastic pursuits NOTE: See Appendix 4 – Colorado Law Regarding Hazing
15. Illicit Drugs: Violating any local, state, federal, or university law, policy, or regulation pertaining to federally illegal drugs other than marijuana, including, but not limited to:
 - a. Manufacturing, selling, providing, using, or possessing federally illegal drugs other than marijuana
 - b. Being in the presence of federally illegal drugs other than marijuana or drug paraphernalia when knowledge of the drugs or drug paraphernalia is reasonable
 - c. Attending classes or university functions under the influence of federally illegal drugs other than marijuana NOTE: See Section G.17 for marijuana
16. Inhalants: Using household or industrial chemicals in a manner not intended by the manufacturer with the intention of getting high
 - a. Also known as huffing, sniffing, or bagging
17. Marijuana: Violating any local, state, federal, or university law, policy, or regulation pertaining to marijuana, including, but not limited to:
 - a. Manufacturing, selling, or providing marijuana without authorization or to an individual(s) under the age of 21
 - b. Possessing or using marijuana or drug paraphernalia while under the age of 21
 - c. Possessing or using marijuana, including medical marijuana, or drug paraphernalia on campus, regardless of age
 - d. Being in the presence of marijuana, marijuana use, or drug paraphernalia that violates policy when knowledge of the marijuana, marijuana use, or drug paraphernalia is reasonable
18. Attending classes or university functions under the influence of marijuana
19. Prescription Drugs: Violating any local, state, federal, or university law, policy, or regulation pertaining to prescription drugs, including, but not limited to:
 - a. Manufacturing, selling, or providing prescription drugs
 - b. Possessing or using prescription drugs prescribed to another
 - c. Using prescription drugs in a manner not prescribed
20. Property Damage: Intentionally or recklessly damaging property that belongs to the university, an organization, or another person
21. Public Exposure: Deliberately and publically exposing one's intimate body parts including, but not limited to:
 - a. Public urination and defecation
 - b. Mooning
 - c. Public sex acts
22. Retaliation: Engaging in retaliatory acts against another person

23. Rioting: Engaging in, inciting, or arming someone for a riot or public disturbance NOTE: See Appendix 5 – Colorado Law Regarding Riots
24. Theft: Taking property of another without permission or possessing property known to be stolen, even with the intent to return the property
25. Threats: Threatening the health or safety of a person(s) that, based on a reasonable person standard, would cause the impacted person(s) distress
26. Unauthorized Presence or Access: Entering into, exiting from, being present in, or accessing property, including, but not limited to, buildings, vehicles, 12 belongings, and digital accounts and systems, that belongs to the university, an organization, or another person without authorization
27. Unauthorized Recording: Making an audio and/or visual recording of another person without the person's expressed permission when such recording could, based on a reasonable person standard, cause the impacted person(s) substantial emotional distress and the storing, sharing, or distribution of such recordings by any means
28. Violation of Law, Policy, or Regulation: Violating any local, state, federal, or university law, policy or regulation; which includes but is not limited to noncompliance with a public health order
29. Violating the CU Denver Housing & Dining Resident Handbook: Engaging in any act or acts that violate any policy or procedure listed in the CU Denver Housing & Dining Resident Handbook while on Lynx Crossing property, regardless of individual student's status as a resident or guest
30. Weapon: Possessing firearms, explosives, fireworks, incendiary devices, ammunition, or other weapons on campus except as permitted by law, or the possession of a harmless instrument designed to look like a firearm, explosive, or dangerous weapon with the intent to cause fear in or assault on another person
 - a. NOTE: See Regents Policy 14I (<https://www.cu.edu/regents/policy-14i-weapons-control/>)
 - i. Students, faculty, and staff possessing a valid Concealed Handgun Permit are allowed to carry concealed handguns on campus in accordance with the law.
 - ii. CU Denver Housing & Dining does not permit handguns regardless of an individual's possession of a Concealed Handgun Permit.

CU Denver's one-year fall-to-fall retention rate is 75 percent for the fall 2012 cohort. That is, of the first-time, full-time, degree-seeking undergraduate students who entered the university in fall 2012, 75 percent were enrolled at the Denver Campus in fall 2013 at the end of the term.

Voluntary System of Accountability (VSA) data indicate that the 2008 Denver Campus first-time, full-time, degree-seeking freshman cohort has an overall 4-year success rate of more than 80%, with 21% retained at another institution, 40% retained at CU Denver, nearly 15% graduated from CU Denver, and another 5.6% received degrees elsewhere.

RIOT LAW (STUDENT RIOT BILL)

Student enrollment-prohibition-public peace and order convictions:

1. No person who is convicted of a riot offense shall be enrolled in a state-supported institution of higher education for a period of 12 months following the date of conviction;
2. a student who is enrolled in a state-supported institution of higher education and who is convicted of a riot offense shall be immediately suspended from the institution upon the institution's notification of such conviction for a period of 12 months following the date of conviction, except that if a student has been suspended prior to the date of conviction by the state-supported institution of higher education for the same riot activity, the twelve month suspension shall run from the start of the suspension imposed by the institution;
3. nothing in this section shall be construed to prohibit a state-supported institution of higher education from implementing its own policies and procedures or disciplinary actions in addition to the suspension under (2) of this section, regarding students involved in riot.

SEX OFFENDER INFORMATION (CAMPUS SEX CRIMES PREVENTION ACT)

Sex offenders are required to list the locations of all institutions of post-secondary education where they volunteer or are enrolled or employed. The Colorado Bureau of Investigation maintains a database identifying all such persons and makes it available to all law enforcement agencies in which jurisdiction the institution of postsecondary education is located. The campus community can obtain this information by contacting the Auraria Police Department at 303-556-5000.

VOTER REGISTRATION (NATIONAL VOTER REGISTRATION ACT)

In compliance with the National Voter Registration Act, the state of Colorado voter registration application form and information is available online at www.sos.state.co.us/pubs/elections/ (<http://www.sos.state.co.us/pubs/elections/>) or www.fec.gov/votregis/vr.shtml (<http://www.fec.gov/votregis/vr.shtml>)

Student Right to Know and Disclosure Information

Website: <https://www.ucdenver.edu/student/forms-policies/right-to-know> (<https://www.ucdenver.edu/student/forms-policies/right-to-know/>)

CRIME STATISTICS

In compliance with the federal Student Right-to-Know and Campus Security Act, the Auraria Campus publishes crime statistics on campus in the Auraria Campus Clery Report. In an emergency, please contact Auraria Campus Police at 303-556-5000 or dial 911 from a campus phone.

PERSISTENCE AND COMPLETION DATA

Section 103 of Title 1 of Public Law 101-542 as amended by Public Law 102-26 (the Federal "Student Right-to-Know" Act) requires that institutions produce and make available to current and prospective students the completion rate of first-time, full-time, degree-seeking undergraduate students entering the institution. Six years after entering, 40 percent of the fall 2008 cohort graduated.

GRADUATE

Graduate Programs

CU Denver offers many options for students who want to continue their education after earning a bachelor's degree. From traditional master's and doctoral programs to graduate certificates and accelerated master's programs, our graduate studies help students continue their education, conduct further research, and improve career skills. Our graduate students work collaboratively with faculty who are consistently recognized for research that shapes our community, the nation, and the world.

CU Denver schools and colleges have developed master's, doctoral, and graduate certificate degrees for students studying on campus and online. Graduate students can choose from more than 50 master's programs. We also offer doctoral degrees in 14 different programs. Additionally, we collaborate with CU Anschutz Medical Campus on combined programs in diverse health care fields, including health ethics and bioengineering.

- Information for Graduate Students (p. 38)
- International Admissions (p. 44)
- Student Finances (p. 46)
- Tuition Classification (p. 50)
- Records and Registration (p. 50)
- Graduate School Policies and Procedures (p. 59)
- Schools, Colleges, and Departments (p. 59)
- Courses A-Z (p. 520)
- Programs A-Z (p. 518)

Information for Graduate Students

Graduate School Contacts

Dean: David Engelke, PhD

Senior Associate Dean: Inge Wefes, PhD

Assistant Dean: Shawna Cox, PhD

Assistant Dean and Director, Postdoctoral Office and Career Development

Office: Bruce Mandt, PhD

Assistant Dean and Director, Recruitment: Kristine Sikora, PhD

Director of Graduate Admissions (Interim): Kelly Santa Maria

Student Progress Coordinator: Stephanie Puello

CLAS Application Specialist: Lindsey O'Reilly

Office: 1380 Lawrence Street, Suite 1251

Telephone: 303-315-2183

Fax: 303-315-5829

Email: graduateadmissions@ucdenver.edu

Website: <https://graduateschool.ucdenver.edu>

Mailing Address:

Campus Box 163

1380 Lawrence St, Room 1251

P.O. Box 173364

Denver, CO 80204

Graduate School

Welcome to the Graduate School at CU Denver. Almost half of our students on the Denver Campus are enrolled in graduate programs. We

have a higher ratio of graduate to undergraduate students than most other universities in the country. This special emphasis on graduate education provides a strong culture of graduate studies on the campus and has engendered a number of innovative programs and teaching methods. Graduate programs on the Denver Campus also benefit from CU Denver's immediate proximity to the city, which provides rich opportunities for internships and employment, collaborations between the university and the city and a wealth of real-world problems that can test and elaborate ideas gained in the classroom.

The mission of the Graduate School is three-fold in support of the University, our students, the faculty, and our training programs.

- **Education:** to enhance and advance outstanding educational experiences for all members of the university and the adjacent community through excellence in graduate education;
- **Innovation:** to encourage and support excellence and innovation in research, creative and scholarly work;
- **Leadership:** to recruit and train the next generation of highly educated leaders from diverse backgrounds to serve and lead in our communities, nation and the world

Not all post-baccalaureate programs at CU Denver|Anschutz fall under the auspices of the Graduate School. Programs that offer "professional" degrees that are independently accredited are overseen by their respective School or College.

For those Graduate Programs or Certificates that fall under the auspices of the Graduate School, the relevant administrative responsibilities are distributed between the central Graduate School office and the home School or College. The graduate programs that fall under the auspices of the Graduate School are listed in the Graduate School Policies and Procedures document found on the Graduate School website (<https://graduateschool.ucdenver.edu/forms-resources/resources/>). Individual graduate programs are detailed in the school/college sections of this catalog.

Admissions Requirements

Note that the following are minimum requirements. College and school regulations, if more stringent, take precedence over the minimum guidelines as set forth by the Graduate School.

- Provisional Degree Students (p. 38)
- Regular Degree Students (p. 39)

Provisional Degree Students

A Graduate Program that wishes to admit an applicant who does not meet the criteria for admission as a Regular degree student can petition the Graduate School to admit the applicant as a Provisional degree student. On the provisional form that accompanies the student's admission documents, the Graduate Program Director outlines the rationale to support such an admission. The form must include a description of the conditions that the student must meet in order to become a Regular degree student. The admission of the applicant as a Provisional degree student requires the approval of the Dean.

Based on the requirements of the Graduate Program and the recommendations of the Graduate Program Director, the Dean will make a determination and advise the Program Director and the student of the conditions that the student must satisfy in order to be transferred from Provisional to Regular status. The Dean, in consultation with the Program

Director, will also determine the time period (1 or 2 semesters for full-time students and a maximum of 4 semesters for part-time students) in which these conditions must be met.

Provisional students are subject to the same standards of performance required of Regular degree students, plus any other requirements imposed by Program faculty as conditions of admission. At the end of the specified probationary period, the Dean, in consultation with the Program Director will review the performance of the Provisional degree student. Provisionally admitted students must either have satisfied the requirements for conversion and be admitted to Regular degree status or be dismissed from the Graduate Program to which they were provisionally admitted.

The Graduate School will notify both the Program Director and the student whether the indicated requirements have been met and the student's status has been converted to that of a Regular student, or if the student failed to meet the requirements and has been dismissed.

Regular Degree Students

Students are admitted by the Graduate School as regular degree students provided they meet the following criteria:

- Hold a baccalaureate or master's degree from an accredited college or university or demonstrate completion of work equivalent to the baccalaureate or master's degree given at CU Denver. Applicants whose credentials include studies or coursework at a College or University outside the USA (not taken as part of a semester abroad program) must include original transcripts and documentation in English (or certified English translation) of the transcript as evaluated by the CU Denver Office of International Affairs.
- have an undergraduate grade point average of 3.00 or better ("A" is equal to 4.0) or a 3.00 or better GPA in twelve (12) credit hours or more of a partially completed graduate level Master's degree program. Applications from individuals who attended a College or University that does not issue grades or a GPA will be evaluated by the Graduate School on a case-by-case basis.
- Have adequate preparation to enter graduate study in the chosen program as demonstrated by their performance in the GRE or an appropriate substitute (i.e., MCAT, an earned MS/MA or PhD from a school in the United States, or completion of at least 12 credit hours of transferable graduate-level course work from an accredited US college or university). Although the Graduate School recommends that applicants take the GRE or other standardized tests, it is not a requirement for admission as a regular degree student if one of the other two indicators of preparedness is present. Some graduate programs, however, may require that all applicants take the GRE or an equivalent.
- Meet any additional requirements (such as particular undergraduate course work) for admission as established by the program.

International students must meet **all** of these requirements and also must provide:

- original transcripts and documentation in English (or a certified English translation) of the completion of a Bachelor's degree, Master's degree or the equivalent as evaluated by the CU Denver Office of International Affairs;
- financial and other documents as required by the International Student and Scholar Services Office to process immigration documents;

- a certified English translation of all academic records and references not in English, and
- evidence of proficiency in English (ELP). More information can be found here (p. 45).

Additional requirements and documentation may also be required.

Application Procedures

- Certificate Students (p. 39)
- New Degree-Seeking Students (p. 39)
- Nondegree-Seeking Students (p. 40)
- Readmission of Former Students (p. 40)
- Transferring Programs (p. 40)

Certificate Students

The application for students wishing to matriculate into a Graduate Certificate Program is completed online at <https://graduateschool.ucdenver.edu/admissions/apply> (<https://graduateschool.ucdenver.edu/admissions/apply/>).

In addition to the online application, official transcripts from Colleges, Schools, and Universities in which the student received a degree are required. Individual Certificate Programs evaluate and select the students they want to admit. A letter of offer from the Certificate Program to the applicant must include a statement indicating that admission to the University is pending final approval of the Graduate School. The Graduate School confirms the applicant's credentials, including authenticating transcripts, and also determines whether the student meets the general requirements of the Graduate School and the specific requirements of the selected Certificate Program. Students admitted to a Certificate Program must meet the same admission criteria as outlined above for degree-seeking students.

Students who are already enrolled in a Graduate Degree Program in which a Certificate is also offered may be admitted into the Certificate Program upon approval of the Program Director and the Graduate School.

New Degree-Seeking Students

Applicants seeking admission to CU Denver's graduate programs should apply online at <https://graduateschool.ucdenver.edu/admissions/prospective-students> (<https://graduateschool.ucdenver.edu/admissions/prospective-students/>).

International applicants should refer to the Information for International Students (p. 45) section of the catalog for more information regarding specific application instructions and requirements.

If applying to more than one program, you must submit a complete application and separate fee to each program.

Students transferring from another University of Colorado campus to the Denver Campus must apply and be accepted by the program on this campus.

A student who has completed a master's program at CU Denver must resubmit an online graduate application for acceptance into a doctoral program.

An applicant for admission must present:

- Submitted online application
- Official transcripts for all academic work in colleges and universities completed to date.
- Three letters of reference. The online application will automatically send recommendation forms to the recommenders indicated on the application.
- A nonrefundable application fee of \$50 for domestic students or \$75 for international students. *No application will be processed until this fee is paid.*
- Any other material required specifically by the program faculty. This may include scores from the GRE or other examination (GRE School code 4875). Check with program coordinators in the departments for additional information that may be required.

Check with the program for the deadline for submitting the application.

Students who wish to apply for a graduate student award (e.g., fellowship, scholarship, assistantship) should contact their department before the application deadline for information, since deadlines are usually earlier for aid requests than for admission.

Nondegree-Seeking Students

A student who wishes to take graduate courses, but is not interested in earning a specific advanced degree, may apply as a nondegree student at: <https://graduateschool.ucdenver.edu/admissions/prospective-students> (<https://graduateschool.ucdenver.edu/admissions/prospective-students/>)

Nondegree students will be allowed to register only on the campus to which they have been admitted.

Nondegree students who later desire to pursue a graduate degree program at this university are encouraged to submit the complete online graduate application and supporting credentials as soon as possible. Credits earned as a nondegree student at the University of Colorado may, at the discretion of the department to which the student is admitted, be transferred into a degree program. The maximum amount of credits allowed for transfer is 12 semester hours for the master's degree, 9 hours for the EdD program, and 30 hours for PhD degrees. These limit totals include both nondegree CU credits and those transferred from other institutions.

Readmission of Former Students

Students who were previously admitted to a Graduate Program but who did not complete that degree program and who have not been registered for more than one (1) year [i.e., three (3) terms] at CU Denver|Anschutz must reapply to the Program supplying updated information and academic credentials. The following requirements must be satisfied before being readmitted:

- clarify their status with the Graduate Program and Graduate School to determine their eligibility to return and pursue the same degree;
- submit an application at least two weeks prior to the first day of the term in which you are interested in taking a course; and
- meet any new admission requirements required of matriculants (i.e., background checks, immunizations, etc.)

However, the Program is under no obligation to readmit the student, and the student should consult with the Program Director before applying.

Transferring Programs

Students who are currently enrolled in a Graduate Program and in good academic standing (i.e., GPA of 3.00 or better) and who want to change Programs or major departments must complete the appropriate application forms and be accepted by the new Program into which they are transferring. The Graduate School maintains a current form for such transfers at <https://graduateschool.ucdenver.edu/>.

New Student Orientation

An orientation program for new students is held prior to the start of the fall semester. The orientation program provides information to new students about activities and services available on the Denver Campus. Information on the expectations, opportunities, registration process, parking and securing ID cards is also provided. Academic advising sessions are held before registration for the term. Students should contact their schools and colleges for additional information on advising, as well as special orientation sessions that may be scheduled for their programs.

Assistantships and Fellowships

Graduate Student Teaching Appointments

Many departments employ graduate students as part-time instructors or teaching assistants. The instructorship is reserved for those advanced graduate students already possessing appropriate degrees who may be independently responsible for the conduct of a section or course. Contact the department for further information.

Research Assistantships

Research activities provide opportunities for graduate students to obtain part-time work as research assistants in many departments. Such assistantships are funded by external grants obtained by faculty members. Contact the department for further information.

Requirements for Graduate Degrees

Graduate School Policies and Procedures

The Graduate School posts the Graduate School Policies and Procedures (https://www.ucdenver.edu/docs/librariesprovider138/denver-anschutz-graduate-school/resources/graduate-school-policies-and-procedures.pdf?sfvrsn=d00622b9_2) that provide information and guidelines for graduate students and faculty at the University of Colorado Denver|Anschutz Medical Campus. Students are encouraged to be familiarize themselves with the policies outlined in this handbook and to use this handbook as a supplement to the personal feedback and guidance of faculty and staff in their departments.

Each graduate program is expected to provide students with a program-specific handbook indicating in some detail the curricular requirements, the expectations for satisfactory progress toward the degree completion, a timeline for the steps needed to meet these expectations and other features unique to each program (such as the composition and formation of thesis, project and dissertation committees to guide and review the student's progress).

GPA Requirements and Quality of Graduate Work

To maintain satisfactory academic progress, advance to candidacy, and earn a certificate or graduate degree, students are required to maintain a minimum program GPA of 3.00 for all graduate courses taken while enrolled in their graduate programs, including any undergraduate (i.e., 4000 level) courses that may be required for the certificate program or graduate degree. Failure to maintain a 3.00 cumulative GPA will result in the student being placed on academic probation. Courses in which grades below "B-" (2.7) are received may not be applied toward fulfillment of the requirements for any graduate (doctoral or Master's) degree or certificate. Courses required by the degree-granting program or certificate and in which the student receives a grade below "B-" must be retaken in order to achieve a "B-" or better grade.

Only earned grades of a "B-" or higher will be calculated into the program GPA. However, all grades received, including repeat courses, will appear on the student's transcript and will be included in the cumulative GPA calculation. Only one course enrollment may be counted towards graduation credits. If a student starts a new Graduate School affiliated degree program after previously having been enrolled in a different program, their program GPA with respect to Graduate School requirements will start anew, and only grades earned while enrolled in the new graduate degree program will be considered in terms of their academic standing in the Graduate School.

Transfer Credits

A transfer credit is any credit that a student earned at another accredited institution *outside* of the CU System. Transfer credit requests may be accepted provided they are recommended by the corresponding program and approved by the school or college dean. The maximum number of credits that may be transferred is 12 for a Master's degree (or 40% if the program requires more than thirty (30) credits) and 30 semester hours for PhD degrees. Limits vary for professional doctorate programs, and individual PhD programs may also have more restrictions.

Courses taken as pass/fail or satisfactory/unsatisfactory may not be transferred. All credits requested for transfer must be graded on an A-F letter grade system. In addition, a grade of B- or above must be earned for a course to be transferred (individual programs may require a higher standard). Courses that are more than seven (7) years old will need to be validated by the Program Director. Courses transferred from a quarter-system school will also be recalculated to their semester equivalent (a 3-quarter hour course at any institution will be equivalent to 2 semester hours).

Coursework that has been applied towards an undergraduate degree or another graduate degree on the same level (e.g., MA to MS) cannot be accepted for transfer credit. Specifically, Master's courses applied to one completed Master's degree program may not be applied to another Master's degree; however, graduate level coursework (5000 level or above) completed for a Master's degree may be applied toward a doctoral degree with program approval. Also, credits earned in a graduate certificate program, that have not also been applied to a graduate degree program, may be applied to a graduate degree program with program approval.

Certificate Program

The minimum number of credit hours required for a Graduate Certificate is twelve (12), although exceptions might apply. While it is expected that

most of the coursework will be at the graduate level (5000 or above), no more than 3 credits may be earned at the undergraduate level (4000 level only), and with the approval of the Certificate Program Director. All graduate level certificate courses (5000 or above) will be eligible for transfer into a subsequent Graduate Degree Program assuming a) they meet the minimum grade requirements of the Graduate Program (which may be more stringent than those of the Graduate School Policies and Procedures), b) the courses are deemed appropriate for the specific program of study, and c) the courses are approved for transfer by the Graduate Program Director.

Admission to Candidacy

Students who have completed the coursework required for a Graduate Certificate must submit a Certificate of Completion form. This form is available on the Graduate School website and must be signed by the Certificate Program Director prior to submission to the Graduate School. The Certificate of Completion form has to be submitted to the Graduate School no later than the deadline posted for the semester in which students expect to have their Certificate awarded. A form that has been approved certifies

1. That the courses listed on the Certificate Completion form are compliant with the Certificate Curriculum and the requirements of the Graduate School,
2. That the course grades meet the minimum requirement of the Certificate Program,
3. The total Graduate Certificate GPA is at least a 3.0.

Master's Degree

The requirements stated below are minimum requirements; additional conditions may be set by the individual programs.

Students planning to graduate should obtain current deadlines from our website (<https://graduateschool.ucdenver.edu/>). It is the graduate student's responsibility to see that all requirements and deadlines are met (e.g., changing of I and IP grades, notification of final examinations, etc.).

Minimum Requirements

The minimum number of credit hours required for a Master's degree is thirty (30). While it is expected that most of this coursework will be at the Graduate level (5000 and above), some Graduate Programs may allow up to two undergraduate courses (4000 level and above) that are outside the specific discipline of their program to count towards the graduate degree and must be approved by the Program Director. Regardless, at least 24 credit hours of those required for completion of the Master's program must be at the graduate level (5000 and above) and undergraduate credits (4000 level and above) cannot exceed 20% of total credit hours required. Of those, at least one has to be from outside the program's discipline (different program four letter prefix) to count towards the graduate degree.

If the program has a thesis, research paper or internship option as the culminating requirement, the thesis/research paper must count for three to six (3-6) credits, unless specified otherwise by individual programs. Independent study coursework must not exceed 20 percent (6 credits) of the 30 credits of coursework required for the Master's degree.

Master's Thesis Credit

Master's students who are enrolled in a program or track that requires a thesis, must register for a minimum of three and a maximum of six hours of thesis work. Once all required semester hours of thesis work have been taken, and all other course work is completed, students may register for CAND 5940 Candidate for Degree for the semester in which they will defend their thesis, if needed. The CAND 5940 Candidate for Degree course carries no credit or grade, but students pay for one credit of resident tuition and minimal fees. Students may only enroll in this course once during their final semester. For financial aid and enrollment verification purposes, students registered for the Candidate for Degree course will be considered full-time. The CAND 5940 is provided as a placeholder for students who have already earned all required credits for graduation, but need to be enrolled in the semester in which they would like to defend or take their final exams.

Thesis Requirements

Students who are enrolled in a program that requires a thesis must undertake their thesis work under the supervision of a thesis advisor and a faculty advisory committee. All research conducted for a Master's degree must meet all appropriate regulatory standards specified by federal, state and local agencies regarding ethical research, animal use, human subjects, HIPAA and environmental safety. Each thesis is presented in partial fulfillment of the requirements for the master's degree and must meet the formatting criteria outlined in the Style and Policy Manual for Theses and Dissertations, available on the Graduate School webpage. Prior to electronic submission to a national repository, the Graduate School performs a format review. Before this submission, theses must have been successfully defended before the student's committee.

A grade of "In Progress" (IP) will be assigned for thesis hours in all semesters until the final approved thesis is submitted to the Graduate School. The thesis advisor determines the final thesis grade and then submits "Change of Record" requests to the Graduate School office to change all IP grades to the one final grade.

Admission to Candidacy

Students who wish to earn a Master's degree must first become candidates. After completing or registering for all program-required course work, students must apply for graduation in their student portal and submit the signed Application for Admission to Candidacy to the Graduate School by the graduation deadline posted for the semester in which they plan to graduate. The candidacy form is available online on the Graduate School website.

An approved form certifies that a student's work is satisfactory and that the courses that are listed on the candidacy form are compliant with the program curriculum and the Graduate School Policies and procedures. Students must hold a minimum GPA of 3.00 to apply for candidacy.

Master's Degree Final Examination / Thesis Defense

All candidates for the Master's degree are required to take a final comprehensive examination, present a cumulative professional portfolio or successfully defend a project or thesis. The final examination or defense is conducted by a committee consisting of at least three members of the graduate faculty. The student's final examination/defense committee and the examination schedule must be approved by the Program Director. The "Request for Graduate Examination" form must

be submitted to the Graduate School at least two weeks prior to the final exam/defense.

The examination or defense may be oral, written, or both, or may consist of an evaluation of the cumulative professional portfolio. The chairperson and student must be present for the oral examination or defense, but a minority of members of the committee may participate by interactive video. If one faculty member cannot be present due to an emergency, the exam can proceed with the faculty who can attend, and the student will schedule a separate meeting with the absent faculty member at an alternate time. A majority of the examination committee members must vote for one of the following examination outcomes: Pass, Conditional Pass or Fail. The original signed form is sent to the Graduate School.

For a Conditional Pass, the examining committee will clearly define the requirements for the student to receive an unconditional passing grade; these requirements must be completed to the satisfaction of the examination committee within four months. Failure to satisfy these conditions will result in failure of the examination. A student who fails the examination is subject to immediate dismissal from the program on the recommendation of the graduate program and concurrence of the Dean.

A student who fails the examination is subject to immediate dismissal from the Program on the recommendation of the Graduate Program Director and concurrence of the Dean. At the program's discretion, a student who fails the examination may be allowed to retake the exam once. The retake must be completed by the end of the next academic semester. Both the original signed examination form noting the failure as well as the signed new exam form for the retake must be filed with the Graduate School.

Time Limit

Master's students, whether enrolled full time (5 credits or above) or part time (less than five credits), have 7 years from the start of course work to complete all degree requirements, including the filing of the thesis with the Graduate School, if the program requires a thesis. Students who fail to complete the degree in this seven-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Graduate School dean. For a student to continue beyond the time limit, the Program Director must petition the dean for an extension and include

1. Reasons why the program faculty believe the student should be allowed to continue in the program, and
2. An anticipated timeline for completion of the degree.

Doctoral Degree

Students who aim to receive a doctoral degree must demonstrate that they are proficient in some broad subject of learning and that they can critically evaluate work in this field. Furthermore, they must have shown the ability to work independently in their chosen field and must have made an original contribution of significance to the advancement of knowledge. The technical requirements stated below are minimum requirements for all candidates for the degree; additional conditions set by the departments or schools will be found in the announcements. Any department may make additional regulations consistent with these general rules.

Minimum Requirements

The minimum number of credit hours required for a PhD degree is thirty (30) credits of coursework, all of which must be at the graduate level

(5000 and above) and thirty (30) dissertation credits. Selected programs might have obtained permission for an exception from this rule from the Graduate Council. Graduate level coursework taken for a Master's degree may be applied toward a doctoral degree with Program approval.

All courses that count towards the minimum requirements for a doctoral degree must be at the graduate level; and must be graded on the A-F system (not pass/fail) and offered within a Degree Program at the 5000 level or above. With the approval of the Program Director, students enrolled in Graduate Programs at CU Denver|Anschutz can undertake graduate-level courses at other campuses within the University of Colorado system.

The minimum enrollment requirement at CU Denver|Anschutz for doctoral students is six (6) semesters of full-time scholarly work beyond the attainment of a bachelor's degree.

PhD students must register for a minimum of 5 hours (and a maximum of 10 hours) of dissertation credit in each fall and spring semester following successful completion of the comprehensive examination.

Once a student has completed 30 dissertation credits, they need to enroll for only one credit in each fall and spring semester until a successful defense of their dissertation. If defending in the summer semester, they must also register for one dissertation credit.

A grade of "In Progress" (*IP*) will be assigned to all dissertation credits earned until the final approved dissertation is submitted to the Graduate School office. The dissertation advisor determines the final dissertation grade, and then submits "Change of Record" requests to the Graduate School to change all *IP* grades to this final grade.

Registration Requirements

A student (who is not on a leave of absence) and fails to register continuously in a given academic year (fall and spring semesters) for dissertation credit hours after passing the comprehensive examination may, at the discretion of the program director, be required to retake and pass the examination in order to regain status as a student in "good standing."

Students who are unable to register for the minimum dissertation credits because of extenuating personal circumstances should apply for a Leave of Absence.

Leave of Absence

Students who need to leave a CU Denver|Anschutz Graduate Program for a period of time should determine, in consultation with their Program Director, whether a petition for a Leave of Absence is required for up to one (1) year. An approved Leave of Absence pauses the student's academic record and automatically extends the time limit for completing a degree by the equivalent amount of time that the student spends on leave. Requests for leaves of absence that exceed one (1) year may be approved on a case-by-case basis with provided justification. Students who are absent for longer than one (1) year will be considered to have withdrawn from the Program and will be required to reapply for admission and be considered with all other applicants.

Examinations

Each doctoral program will require at least comprehensive and final examinations. Notice of all examinations must be filed with the Graduate School at least two weeks prior to administration.

Preliminary Examination

Each Program is responsible for ensuring that students are qualified for doctoral studies by passing a comprehensive examination or a combined preliminary and comprehensive examination. If a program evaluates students' preparedness with a separate preliminary examination, it must be administered equitably to all students, with the limited exception of programs that require a student to have a master's degree before entering doctoral training; a master's degree may exempt the student from the preliminary examination but cannot exempt the student from the comprehensive examination.

Comprehensive Examination

After completing or registering for all program-required, non-dissertation coursework, and concurrent with applying for admission to candidacy, doctoral students must take a comprehensive examination in their respective discipline. This examination will test a student's mastery of a broad field of knowledge, not merely the formal coursework that has been completed.

The examination committee shall consist of a minimum of three (3) graduate faculty members. A majority of the committee members, including the Chair, must be members of the degree-granting Program. The student's dissertation advisor, if already identified, may not chair the comprehensive examination committee. The student's comprehensive exam committee and the examination schedule must be approved by the Program Director before being submitted to the Graduate School on the Exam Request Form. The Graduate School must receive the Exam Request Form by published deadlines. Individual graduate programs may have additional requirements for registering/scheduling the exam.

At the Program's discretion, the oral portion of the comprehensive examination may be open to all members of the Program, after which the student shall meet with the examination committee in a closed session. This examination must be completed no later than the end of the third (3rd) year for full-time students, unless indicated otherwise in program-specific guidelines and communicated to the Graduate School.

All members of the committee must be present for the examination, either in person or by interactive video. Exceptions to this rule must be approved by the Graduate School. The primary faculty advisor's participation is determined by the program, if that person is not already part of the committee. In the event of an emergency that prevents one (1) faculty committee member from attending the exam, the exam may proceed with the faculty members who are able to attend. The student must schedule a separate meeting with the absent faculty member at an alternate time. The examination form must be signed by the committee and returned to the Graduate School. If the original Chair must be absent, a replacement must be designated by the program. A majority of the examination committee must vote for one of the following outcomes: a) Pass; b) Conditional Pass; or c) Fail. All members of the committee must sign the exam report form to document their individual vote and the form, with original signatures, must be returned to the Graduate School in hard copy or high quality scan.

If a student receives a Conditional Pass, the examining committee must clearly define the requirements for the student to receive an unconditional passing grade, and these requirements must be completed to the satisfaction of the examination committee within four (4) months. The committee Chair is responsible for monitoring the conditions and reporting their outcome to the Graduate School. Failure to satisfy these conditions will result in failure of the examination.

A student who fails the examination is subject to immediate dismissal from the Graduate School upon the recommendation of the program and concurrence of the Dean. At the program's discretion, a student who fails the examination may retake it once. The re-examination will be in the form designated by the committee and must be completed within twelve (12) months. The original examination form noting the failure should be signed by the committee and returned to the Graduate School. The student will be required to meet registration requirements and be registered during the term in which the exam is repeated.

Final/Dissertation Examination

After the dissertation has been completed, a final examination on the dissertation and related topics is conducted in two (2) parts: an oral presentation of the dissertation research that is open to the public and a closed examination conducted by the examining committee.

The final examination/defense committee is usually, but not necessarily, the same as the student's Dissertation Advisory Committee. The dissertation defense committee shall consist of a minimum of four (4) Graduate Faculty members, except for professional doctorate programs, which require a minimum of three (3) Graduate Faculty members. A majority of the committee members, including the Chair, must be graduate faculty members of the degree-granting program. With program approval, *the doctoral student's dissertation advisor may chair the examination committee.*

The student's final examination/defense committee and the examination schedule must be approved by the Program Director before being submitted to the Graduate School on the Exam Request Form. The Graduate School must receive the Exam Request form by published deadlines. Graduate Programs may have additional requirements for registering/scheduling the exam. The Graduate School will send announcements of the examination to appropriate faculty members, and the Exam Report/signature form will be sent to the committee chair and other Program staff for completion at the examination.

The student must submit finalized draft copies of the dissertation to the defense committee at least two (2) weeks before the examination date. Programs/committees may require an earlier deadline. All members of the committee must be present for the examination, either in person or by interactive video. Exceptions to this rule must be approved by the Graduate School. The primary faculty advisor's participation is determined by the Program, if that person is not already part of the committee. In the event of an emergency that prevents one (1) faculty committee member from attending the exam, the exam can proceed with the faculty members who can attend, and the student will schedule a separate meeting with the absent faculty member and the exam committee chair at an alternate time. If the original committee Chair must be absent, a replacement must be designated by the Program. A majority of the examination committee must vote for one of the following outcomes: a) Pass; b) Conditional Pass; or c) Fail. All members of the committee must sign the exam report form to document their individual vote and the form, with original signatures, must be returned to the Graduate School in hard copy or high quality scan.

If a student receives a Conditional Pass, the examining committee must clearly define the requirements for the student to receive an unconditional passing grade, and these requirements must be completed to the satisfaction of the examination committee within sixty (60) days of the defense. Under extenuating circumstances, the graduate Program Directors may petition the Graduate School for additional time. If a

student fails the examination, they may not continue in the program unless a time extension is s

Dissertation Requirements

A dissertation is based upon original research and is expected to demonstrate mature scholarship and critical judgment, as well as familiarity with the tools and methods of research. The work must be conducted and presented on a subject approved by the student's dissertation advisor and the Dissertation Advisory Committee. The research must meet any regulatory standards specified by federal, state, and local agencies regarding ethical research, animal use, human subjects, HIPAA and environmental safety.

The dissertation is presented in partial fulfillment of the requirements for the doctoral degree and must meet the formatting criteria outlined in the Formatting Guide for Theses and Dissertations available on the Graduate School website. Substantive contributions to research and writing by other persons should be explicitly acknowledged, either in an Acknowledgements section or in the appropriate chapters. The Graduate School or the Graduate Program conducts the final review of dissertations for proper formatting. The final, formally approved dissertation must be submitted to the Graduate School, with the completed Thesis Approval Form, within sixty (60) days of the thesis defense unless an extension is approved by the Graduate School. The thesis must be approved by a majority of the defense committee members, plus the student's advisor, if that person is not part of the defense committee.

Time Limit

Doctoral students, whether enrolled full time or part time, must complete all degree requirements within eight (8) years of matriculation. Students who fail to complete the degree in this eight-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Graduate School Dean. For a student to continue beyond the time limit, the Program Director must petition the Dean for an extension and include:

1. Reasons why the program faculty believes the student should be allowed to continue in the program and,
2. An anticipated timeline for completion of the degree. Extensions for time to degree are normally issued for one year or less, but under rare circumstances, a second extension may be granted. The "Extension of Time Limit" form is posted on the Graduate School website. Approved "Leaves of Absence" automatically extend the time limit for earning a degree by the equivalent amount of time that the student is on leave.

International Admissions

Director of International Enrollment Management: Clay Harmon

Physical Address:

Student Commons Building, Suite 1119
1201 Larimer Street, Denver, CO 80204

Mailing Address:

Campus Box A005
PO Box 173364
Denver, CO 80217-3364

Telephone: +1 (303) 315-2382

Email: application@ucdenver.edu

Website: <http://internationaladmissions.ucdenver.edu> (<http://internationaladmissions.ucdenver.edu/>)

Overview

CU Denver International Admissions evaluates international academic credentials for international graduate applicants, as well as US citizens, permanent residents, and other applicants who have studied outside the United States before studying at CU Denver. We also manage the English language proficiency policy for international graduate applicants.

This page contains information for international applicants to graduate programs. For information about applying to an undergraduate program as an international student, please visit this page (<http://catalog.ucdenver.edu/cu-denver/undergraduate/admissions/international-admissions/>).

Application Information for Graduate International Students

Application and Documentation Requirements

Please review the Graduate Admissions page (p. 38) for information about transcripts. Make sure to visit the website for your program of interest to find the list of required documents and test scores for your major. If you have any questions, International Admissions is here to help - please feel free to contact us at any time.

Note: the application fee for international applicants is \$75.

Application Deadlines

Application deadlines vary significantly. Please contact your program of interest to learn more.

Non-Degree Admissions

Do you want to explore CU Denver before applying to a degree program? Would you like to complete a course for professional development or transfer credits to another institution? If so, non-degree admission is right for you.

*Note that if you already have a bachelor's degree, you will need to complete the graduate non-degree application. As a graduate non-degree student, you still will have the option to enroll in undergraduate course work. If you want to take specific courses requiring pre-requisites, we recommend that you contact the Registrar's office at registrar@ucdenver.edu before you apply.

Certificate/Continuing Professional Programs

Professionals who want to advance their careers or learn a new skill can earn a certificate from CU Denver. Our certificate programs provide specialized information delivered by knowledgeable professors. Additionally, our continuing education classes help you stay current with developments in your field.

*If you want to enroll in courses identified as Continuing and Professional Education (<http://www.ucdenver.edu/academics/continuing-education/>

Pages/), do not apply for non-degree admission. See your program for application information.

Graduate Non-Degree/Certificate/Continuing and Professional Education Admissions

- International non-degree/certificate/CPE applicants must provide Proof of English Language Proficiency (<https://www.ucdenver.edu/international-admissions/apply-for-admission/graduate/>). If you have any questions regarding the ELP requirement, please contact International Admissions at application@ucdenver.edu.
- Please contact the applicable college/graduate department below for specific admission requirements and deadlines:

Business School

College of Engineering, Design and Computing

College of Liberal Arts and Sciences

College of Nursing

Colorado School of Public Health

Graduate School

School of Education and Human Development

School of Public Affairs

Skaggs School of Pharmacy and Pharmaceutical Sciences

After Admission

- Immigration Clearance Form is required for all non-degree international applicants
- Non-degree coursework requires additional processing steps for the I-20. International Student and Scholar Services (<https://www.ucdenver.edu/services/international-student-and-scholar-services/>) (ISSS) will help with those requirements.

Proof of English Language Proficiency

International applicants to CU Denver must provide proof of English language proficiency (ELP) in order to be considered for full admission. Some graduate programs will consider international applicants for conditional admission if they apply without adequate proof of ELP. Contact International Admissions if you have questions about ELP or conditional admission.

You may meet the ELP requirement via any of the options listed below.

1. Citizenship Exemption

International applicants holding citizenship from the following countries do not need to prove their English language proficiency for admission to CU Denver. This list is based on the United Kingdom government's list of countries (<https://www.gov.uk/student-visa/knowledge-of-english/>) exempt from proving English ability when applying for a UK student visa.

- Antigua & Barbuda
- Australia

- The Bahamas
- Barbados
- Belize
- Canada
- Dominica
- Grenada
- Guyana
- Ireland
- Jamaica
- Malta
- New Zealand
- Saint Kitts & Nevis
- Saint Vincent & the Grenadines
- Trinidad & Tobago
- United Kingdom

2. ESL Academy

International applicants may meet the English language proficiency requirement for any program of study at CU Denver by successfully completing every class in level 5 at CU Denver's ESL Academy (<https://clas.ucdenver.edu/esl/>).

3. English Language Proficiency Tests

CU Denver accepts the following tests as proof of English language proficiency.

Minimum Score Requirements

Test	TOEFL iBT	IELTS Academic	PTE Academic	Duolingo English Test
Overall Score	79	6.5	58	105
Subscores				
- Reading	18	5.5	42	Literacy: 85
- Listening	17	5.5	42	Conversation: 85
- Speaking	20	5.5	42	Comprehension: 85
- Writing	17	5.5	42	Production: 85

Notes:

- The scores listed above are the university minimum requirements. Some graduate programs require higher scores for admission. Please visit the website for your program of interest for more information.
- CU Denver's TOEFL code is 4875. For all other tests, please search for or choose "University of Colorado Denver."
- CU Denver accepts TOEFL MyBest scores and superscored IELTS scores.

4. Coursework Completion

International applicants who have completed the following coursework will be considered to have met the English language proficiency requirement.

- The applicant has earned a bachelor degree in the United States; or has earned a post-secondary qualification, comparable to a US bachelor degree, in one of the exempt countries listed above; or has earned such a qualification at an institution accredited by an exempt country but located in a non-exempt country, **or**

- The applicant has completed 12 or more semester hours of coursework in a master or doctoral degree program in the United States with an overall GPA of 3.0/4.0 or higher; or has completed a comparable amount of graduate coursework with a comparable GPA in one of the exempt countries listed above; or has completed such coursework at an institution accredited by an exempt country but located in a non-exempt country.

Immigration Process

International Services Specialists in International Student & Scholar Services (ISSS) (<https://www.ucdenver.edu/services/international-student-and-scholar-services/>) handle the immigration process for international students. ISSS will issue an immigration document (Form I-20 or Form DS-2019) to you, if applicable, only after you have confirmed your acceptance and submitted the Immigration Clearance Form (see below).

You will be contacted within five (5) business days of receiving your decision letter and will need to provide:

Proof of Financial Support: If you have already sent financial documents to the International Admissions Office, that information will be forwarded to ISSS. If you have not already provided this information, or if your information needs to be updated, you will have an opportunity to provide ISSS with your proof of financial support when you complete the online Immigration Clearance Form that your International Services Specialist will send to you.

Passport/Visa Information: If you have already sent this information to International Admissions, it will be made available to ISSS who will contact you if they need more information.

Note: International students living outside of the U.S. will need to provide a copy of their passport, if it has not already been sent. Those living in the U.S. should be prepared to submit a copy of their passport, visa, Form I-94 Arrival/Departure Record and Form I-20, Form DS-2019, or Form I-797 (if applicable). In all correspondence, please use your name as it appears on your passport.

Please visit ISSS (<https://www.ucdenver.edu/services/international-student-and-scholar-services/>) for more information on Pre-Arrival, Arrival at CU Denver, I-20/DS-2019 Timeline, and more.

Student Finances

Contact Information

Bursar's Office

Location: 5th Floor Student Commons Building, 1201 Larimer Street Ste 5123

Customer Service Phone Center: 303-315-1800

E-mail: bursar@ucdenver.edu

Website: <https://www.ucdenver.edu/student-finances/billing-payments> (<https://www.ucdenver.edu/student-finances/billing-payments/>)

Financial Aid & Scholarships Office

Director of Financial Aid Services, Denver: Michelle Toro-Dietz

Location: 5th Floor Student Commons Building, 1201 Larimer Street Ste 5105

Phone: 303-315-1850

Email: FinancialAid@ucdenver.edu

Website: <https://www.ucdenver.edu/student-finances/financial-aid>
(<https://www.ucdenver.edu/student-finances/financial-aid/>)

Overview

At CU Denver, we have a longstanding belief that finances should never stand in the way of motivated, talented individuals who want to better themselves and make a positive impact on the world around them. Through a tradition providing strong financial assistance and aid programs, we enforce this belief every day.

Quick Guide

Not sure of the difference between the student finance offices? Here's a quick guide to finding what you need.

Bursar

- Application Fees Payments
- College Opportunity Fund
- Departmental Deposit Transactions
- Tuition and Fee Payments
- Refunds and Direct Deposits
- Student Account Reconciliation
- Third-Party Billing
- Student Balance Outreach
- Past Due Tuition Collection
- Tax Offsets

Financial Aid & Scholarships

- How to apply for financial aid
- Free Application for Federal Student Aid (FAFSA) <https://fafsa.ed.gov/>
- Work-study and student employment opportunities
- Grant and student loan information
- Special circumstances, academic progress or financial hardship appeals
- Scholarships Information

Financial Aid

It's been said that a college degree is an investment in your future. But for many, financing that investment seems unattainable. That doesn't have to be the case. While the world of financial aid can seem intimidating, if you break it down and put in the work, making financial aid work for you will be the first step toward opening a door to your future.

Below is more information to help you navigate the financial aid process:

- Applying (p. 47)
- Awards (p. 47)
- Eligibility (p. 47)
- Grants, Loans and Work-Study (p. 47)
- Qualifying (p. 48)

Applying

The Financial Aid & Scholarships Office delivers more than \$128 million in financial aid awards to qualified students at the Denver Campus each year. Graduate Students will be considered for a financial aid award

primarily made up of student loans. Some work-study funding is available to graduate students as well.

To be considered for financial aid, students should complete the Free Application for Federal Student Aid (FAFSA (<https://studentaid.gov/h/apply-for-aid/fafsa/>)) annually. The application becomes available October 1 of each year for the upcoming year's funding. Upon completing the application, students should monitor their email provided on the FAFSA, University email, and UCDAccess (<https://passport.ucdenver.edu/login.php>) portal To Do List for requests for follow up paperwork. Students may also obtain important information online at <https://www.ucdenver.edu/student-finances/financial-aid> (<https://www.ucdenver.edu/student-finances/financial-aid/>). All financial aid policies and procedures are subject to change due to revisions in federal and state laws, regulations, guidelines and applicable institution policies.

Awards

Students are informed by University email when awarded financial aid. The email notice advises students to review their award on the UCDAccess (<https://passport.ucdenver.edu/login.php>) portal. Financial aid awards should be available for review approximately four to six weeks after the Financial Aid & Scholarships Office accepts and processes all required documents. The information provided will include types of awards and the amount of aid awarded.

Eligibility

Each student must meet the following eligibility criteria to qualify for financial aid:

1. Be a U.S. citizen or eligible noncitizen.
2. Have a valid social security number (exceptions for students from the Republic of the Marshall Islands, Federated States of Micronesia, or the Republic of Palau).
3. Be classified as a degree-seeking in an eligible degree or certificate program.
4. Be enrolled at least half-time (3 credits hours for graduate students).
5. Meet financial aid Satisfactory Academic Progress (SAP) standards at the end of each term.
6. Not be in default on any student loan or owe a refund on any educational grant.
7. Male applicants must be registered with the Selective Service.
8. Sign a statement on the FAFSA indicating that you will use federal student aid for educational purposes only.

Grants, Loans and Work-Study

Grants

Colorado Graduate Grant (CGG) - CGG is a state funded grant program. High-need students (determined by the FAFSA) studying Science, Technology, Engineering or Math (STEM) are considered for the award, however it is not guaranteed. To be considered for this grant, students must be residents of the state of Colorado and enrolled in a minimum of 4 credit hours per semester. Amounts vary each year depending on funding and the number of eligible students.

Federal Teach Grant - TEACH Grant is a federally funded grant program available to students enrolled in specific programs who intend to teach in a public or private school that serves students from low-income families. Students can be considered for up to \$4000 per academic year, if eligible.

To learn more, visit Student Aid on the Web (<https://studentaid.gov/understand-aid/types/grants/teach/>).

Loans

Federal Direct Unsubsidized Loan - The Federal Direct Unsubsidized Loan is a non-need based, federally funded loan. To be considered for the loan, students should complete the FAFSA. Students receive a six-month grace period before entering repayment. The grace period begins six-months after the student ceases to be enrolled at least half-time, discontinues their program of study or graduates. The yearly aggregate limit for the loan is \$20,500.

Federal Direct Graduate PLUS Loan - The Federal Direct Unsubsidized Loan is a non-need based, federally funded loan. To be considered for the loan, students should complete the FAFSA. The student receives a six-month grace period before entering repayment. The grace period begins six-months after the student ceases to be enrolled at least half-time, discontinues their program of study or graduates. Graduate PLUS Loans are awarded after the full yearly or lifetime (whichever limit is reached first) aggregate amount of the Direct Unsubsidized Loan is awarded (see above). Students must receive an approved credit result to borrow a Graduate PLUS Loan.

Work-Study

Federal Work-Study - This is a federally funded, need-based work-study program that allows students to work on a part-time basis (on campus, off campus or at nonprofit agencies) to help meet their educational costs.

Qualifying Financial Need

Financial Aid eligibility is largely based on the concept of financial need. Financial need is calculated as the Cost of Attendance (tuition, fees, books, and living expenses) minus the Expected Family Contribution or EFC (student/spouse contributions and parents' contribution for dependent students). A student's EFC is assigned directly from the information provided on the FAFSA application.

Cost of Attendance is the estimated annual cost to attend CU Denver, including tuition and fees, room, board, books and supplies, transportation and personal expenses. The Financial Aid & Scholarships Office determines standard COA based upon average tuition and fees charged and other items established by the Colorado Department of Higher Education. Current COA figures are available on the website <https://www.ucdenver.edu/tuition-cost/cost-of-attendance> (<https://www.ucdenver.edu/tuition-cost/cost-of-attendance/>).

The EFC from the student and spouse (if applicable) are calculated by a standardized formula that is determined by data provided on the FAFSA and is required by federal law. The formula considers income, savings and other assets, family size, number of children in postsecondary school and other factors and then assigns a student an EFC.

Financial Aid is intended to supplement and not replace financial contributions from the student/spouse. If the EFC is equal to or greater than the COA, then the student will not qualify for need-based financial aid, but can still receive non-need based financial aid such as Federal Direct Unsubsidized Loans or Federal Direct Graduate PLUS Loans up to but not exceeding their COA. Direct Unsubsidized Loans and Direct

Graduate PLUS Loans comprise the majority of all graduate students' financial aid awards regardless of financial need.

Enrollment Status

Most graduate financial aid programs require at least half-time enrollment (3 credit hours per semester) to be eligible for awards.

Notice for Graduate Students: The financial aid definition of half-time enrollment may differ from the academic definition of half-time enrollment based on degree programs. See a financial aid advisor for more information.

Satisfactory Academic Progress (SAP)

To continue to be eligible for financial aid, students must meet Satisfactory Academic Progress. If a student is not meeting SAP standards, they may be ineligible for financial aid and scholarships. For more information, students should review the Satisfactory Academic Policy by visiting <https://www.ucdenver.edu/student-finances/financial-aid/eligible/sap> (<https://www.ucdenver.edu/student-finances/financial-aid/eligible/sap/>).

A student may appeal financial aid suspension by submitting a SAP Appeal. The SAP appeal should document the extenuating circumstances that led to the student's suspension. All appeals should include third party supporting documentation.

Course Withdrawals and Repayments

Financial aid is disbursed based on the assumption a student will attend courses for the entire semester and earn passing grades. A student who withdraws or fails all courses and received financial aid must have a Return of Title IV (R2T4) calculation performed to determine the percentage of aid that was earned based on the amount of time the student attended their courses. Students are entitled to aid that was earned. The University will return any unearned aid to the appropriate Federal Title IV program, which may create a balance owed to the University.

The University will also determine the earned and unearned portions of any state or institutional aid. This calculation is separate from the R2T4 aid calculation.

If you withdraw on or before the University's census date, you will be required to return all state and/or institutional aid received for the term. The Bursar's Office will bill your account for the amount owed.

If you withdraw after the census date, you will be required to repay a portion of any state and institutional received for the term based on your withdrawal date.

CU Denver is required to verify a student began attendance in any course a student withdraws from or fails. If the Financial Aid & Scholarships Office receives notification that a student never began attendance.

Scholarships

The Financial Aid & Scholarships office awards over \$18 million dollars in scholarships annually. For a complete listing of the many scholarships offered at the Denver Campus, visit <https://www.ucdenver.edu/student-finances/scholarships> (<https://www.ucdenver.edu/student-finances/scholarships/>).

Tuition and Fees

When a student begins researching higher education institutions, tuition is often the first stop. Graduate tuition costs are different for in-state students – students who have Colorado residency – and out-of-state students – those attending CU Denver from outside of Colorado. Tuition and fees are based largely on the classes you take, and which school or college is offering your classes, as well as your resident status. It is important that you understand your residency status (<https://www.ucdenver.edu/registrar/residency/>) because it impacts more than just tuition rates.

Tuition is the amount a student pays for instruction per course at a college or university. Tuition costs are often listed along with additional fees that all students must pay. These fees cover anything from the student wellness center and other facility maintenance costs to technology upgrades and transportation expenses.

All tuition and fee rates are established by the Board of Regents, the governing body of the University of Colorado, in accordance with legislation enacted annually by the Colorado General Assembly. The Regents set tuition rates and fees at a budget retreat each spring for the coming fall, spring and summer terms, but reserve the right to change rates at any time. Rates for the current year are available online to assist prospective students in anticipating costs. Please refer to the Tuition and Fees (<https://www.ucdenver.edu/student-finances/tuition-fees/>) site in July for new rates.

- Direct Deposit (p. 49)
- Drop Charge (p. 49)
- Past Due Tuition and Fees (p. 49)
- Tuition Appeals (p. 49)

Direct Deposit

Direct deposit is the standard method of issuing student account refunds to CU Denver students with credit balances. Students are strongly encouraged to sign up for direct deposit well in advance of any anticipated student account refunds, and may do so online via the UCDAccess portal (<https://passport.ucdenver.edu/login.php>).

In your "Student Center", select "Student Account"

1. Go to "Direct Deposit Student Refunds"
2. Follow the instructions and input your banking information.

Students who do not sign up for direct deposit will receive a paper refund check through the mail. Refunds will only be issued via direct deposit or through the mail. **Students are not allowed to pick up their refund check from the Bursar's Office.**

Drop Charge

Beginning the second Tuesday of the fall and spring terms until census date, a \$100 drop transaction charge will be assessed each time a student drops a course. Please refer to the academic calendar (<https://www.ucdenver.edu/student/registration-planning/academic-calendars/>) for exact dates. This includes student initiated drops done in order to change sections within a course. Section changes done for an administrative purpose through the deans' offices will be exempted from drop charges. If a student withdraws, dropping all classes, a drop charge will be assessed for each course.

Past Due Tuition and Fees

Past due student accounts will be assessed a one-time per semester late charge and a monthly service charge for every month the balance remains unpaid. After the semester of the past due debt, student accounts are referred to Student Debt Management. An overdue student account may be referred to a third party collection agency and reported to one or more credit bureau reporting services; the student explicitly authorizes University of Colorado Denver to release personal and financial information under those circumstances. To the extent permitted by applicable law, the student agrees to reimburse the University of Colorado Denver the fees of any collection agency, which may be based on a percentage at a maximum of 40% of the debt, and all costs and expenses, including reasonable attorney's fees, the University may incur in such collection efforts. In addition, while the student maintains a past due balance with the University of Colorado Denver, a hold will be placed on the student record preventing any future registration, the release of official transcripts and diplomas.

Pursuant to C.R.S. § 23-5-115, in the event of a default on an amount owed to University of Colorado Denver, University of Colorado Denver may certify to the Colorado Department of Revenue information regarding persons with past due accounts. The Colorado Department of Revenue may then disburse funds to University of Colorado Denver in satisfaction of that debt from tax refund amounts owed to the individual, if any.

See the [Tuition and Fees Payment Disclosure Statement \(https://www.ucdenver.edu/docs/librariesprovider22/billing-payments/tuition-and-fee-agreement.pdf\)](https://www.ucdenver.edu/docs/librariesprovider22/billing-payments/tuition-and-fee-agreement.pdf).

Students who owe a past due debt to the university in excess of \$500.00 may be administratively dropped from any future terms if the past due amount is not paid in full or set up on a payment plan. The drop will occur the Friday prior to the first day of classes of the next term. For more information, please see the Bursar's Administrative Withdrawal Policy (<https://www.ucdenver.edu/docs/librariesprovider22/billing-payments/admin-withdrawal-policy.pdf>).

Tuition Appeals

Students are responsible for abiding by the published deadlines. Tuition is not refundable when students drop or withdraw from courses after the published deadlines. If circumstances beyond the student's control have made the late drop or withdraw necessary, the student may file a tuition appeal.

Instructions and forms for submitting a tuition appeal are available here (<https://www.ucdenver.edu/student-finances/tuition-fees/tuition-appeals/>).

Billing and Payments

Please visit our website (<https://www.ucdenver.edu/student-finances/billing-payments/>) for more information, including state and federal regulations, policies specific to CU Denver (<https://www.ucdenver.edu/student-finances/billing-payments/policies/>), cost per credit hour, how to make payments, important dates (<https://www.ucdenver.edu/student/registration-planning/billing-calendars/>), as well as Residency (<https://www.ucdenver.edu/registrar/residency/>) and the College Opportunity Fund (<https://www.ucdenver.edu/registrar/residency/college-opportunity-fund/>) (COF) and how they could affect your tuition bill.

Payment of Tuition and Fees

All tuition and fees, except the application fee, are due on the day indicated on your billing statement. Students have an option to choose a payment plan available through QuikPAY, our payment processor. Specific information on the payment plan can be located here (<https://www.ucdenver.edu/student-finances/billing-payments/payment-plans/>).

Students who register for courses are liable for payment of tuition and fees if they withdraw from school after census date. Refund policies for students who withdraw from the University both before and after census date are included in the academic calendar. A student with financial obligations to the University will not be permitted to register for any subsequent term(s), or be issued transcripts or diplomas. The only exception to this regulation involves federal student loans and other types of indebtedness that are due after graduation. Students may pay tuition through the UCDAccess portal, with cash, personal checks, by credit card at the Bursar's Office. Any payment transaction that is returned by the bank will be assessed an additional returned payment charge.

The University of Colorado Denver is committed to providing students and their families a range of options for paying their educational expenses. The credit card payment method has become prohibitively expensive due to the fees charged by credit card companies to CU Denver for credit card transaction processing. This expense has been covered by University tuition revenues, and reduces the tuition dollars available for academic programs and services for all students. Therefore, a service fee of 2.75% of the payment amount will be assessed for all credit and debit card transactions.

Students who register in a non-degree status, and who later apply and are admitted to a degree status for that term, are responsible for the difference in tuition between the non-degree program and their applicable degree program and will be billed accordingly.

Tuition Classification

Residency Classification for Tuition Purposes

Tuition classification is governed by Colorado statutes that apply to all state-funded institutions in Colorado. Institutions are bound by the provisions of this statute and are not free to make exceptions to the rules set forth.

Students are initially classified as in-state or out-of-state for tuition purposes at the time of application. The classification is based upon information furnished by the student and from other relevant sources. After the student's status is determined, it remains unchanged in the absence of satisfactory evidence to the contrary.

Once a student is classified as a nonresident for tuition purposes, the student must petition for a change in classification. Petitions must be submitted **no later than the Monday prior to the first official day of classes** of the term for which the student wishes to be classified as a resident. It is preferred that petitions be received 30 days prior to the beginning of the term. Late petitions will not be considered until the next semester. Specific information may be obtained from the Office of the Registrar.

The final decision regarding tuition status rests with the university. Questions regarding residence (tuition) status should be referred only to

the tuition classification officer. Opinions of other persons are not official or binding upon the university. Additional information is available on our website (<https://www.ucdenver.edu/registrar/residency/>).

Basic Requirements

The statute provides that an in-state student is one who has been a legal domiciliary of Colorado for one year or more immediately preceding the beginning of the term for which the in-state classification is being sought. Persons over 23 years of age or who are emancipated establish their own legal domicile. Those who are under 23 years of age and are not emancipated assume the domicile of their parent or court-appointed legal guardian. A non-emancipated minor's parent/legal guardian must, therefore, have a legal domicile in Colorado for one year or more before the minor may be classified as an in-state student for tuition purposes.

Establishing Domicile

Domicile is established when one has a permanent place of habitation in Colorado and the intention of making Colorado one's true, fixed and permanent home and place of habitation. The tuition statute places the burden of establishing a Colorado domicile on the person seeking to establish the domicile. The question of intent is one of documentable fact and needs to be shown by substantial connections with the state sufficient to evidence such intent. Legal domicile in Colorado for tuition purposes begins the day after connections with Colorado are made sufficient to evidence one's intent. The most common ties with the state are

1. change of driver's license to Colorado,
2. change of automobile registration to Colorado,
3. Colorado voter registration,
4. permanent employment in Colorado and most important,
5. payment of state income taxes as a resident by one whose income is sufficient to be taxed.

Caution: payment or filing of back taxes in no way serves to establish legal domicile retroactive to the time filed. In order to qualify for in-state tuition for a given term, the 12-month waiting period (which begins when the legal domicile is established) must be over by the first day of classes for the term in question. If one's 12-month waiting period expires during the semester, in-state tuition cannot be granted until the next semester.

Resident Tuition for Military-Connected Students

Military-connected students living in the state of Colorado may be able to receive in-state residency for tuition purposes at CU Denver and CU Anschutz as designated by Federal or State Law. Please review the information on the Veteran and Military Student Services website (<https://www.ucdenver.edu/veterans/benefits/>) for more information.

Western Regional Graduate Program (WRGP)

A student can qualify for the WRGP and pay the resident tuition rate. In order to qualify for WRGP the student must enroll into a qualifying degree program. A student can obtain more information by contacting the Office of Graduate Admissions.

Records and Registration

Office of the Registrar

Associate Vice Chancellor for Student Enrollment Operations & Compliance and University Registrar: Carrie John**Director of Registrar Services:** Cindy Justice**Office:** Student Commons Building, Suite 5005**Telephone:** 303-315-2600**Fax:** 303-315-2550**E-mail:** registrar@ucdenver.edu**Website:** www.ucdenver.edu/Registrar (<http://www.ucdenver.edu/Registrar/>)

Overview

CU Denver offers students a completely online system of planning their schedules and registering for classes. As a student, you are responsible for knowing the deadlines, rules, regulations, course loads, prerequisites and policies of the university, as well as those of the college or school in which you are enrolled, all of which is provided within this online catalog. Please refer to the Academic Policies section for more specific information related to records and registration.

Students should review the sections of this catalog that describe in detail the academic programs available at the Denver Campus.

The registrar's office will send an e-mail message to the student's university-assigned e-mail address, inviting the student to register, including registration information and a registration time assignment. Registration is by time assignment only. Students may register via the web on or after their assigned time.

Services offered include:

- Academic Calendar
- Catalog
- Degree Audit
- Diplomas
- Enrollment Verification
- Grades and Academic Standing
- Name and Record Update Form
- Registration including Inter-Campus and Inter-Institutional
- Residency Petition Forms for Continuing Students
- Schedule Adjustment Forms
- Transfer Credit Evaluation
- Transcripts

Academic Calendar

Consult the official CU Denver Academic Calendar to determine when registration will open and close for each term. CU Denver academic calendars for upcoming semesters can be found on the Registrar's Office webpage (<https://www.ucdenver.edu/student/registration-planning/academic-calendars/>).

FERPA

FERPA: Family Educational Rights and Privacy Act

FERPA is a federal privacy law that protects students' educational records. Under this law, students have three primary rights:

- Inspect and review their education records.
- Seek to amend incorrect education records.
- Have some control over the disclosure of information from their education record.

FERPA directory information is information contained in a student's education record that generally would not be considered harmful or an invasion of privacy if disclosed. Under current CU Denver policy, the following information is designated as directory information:

- Student name. If provided, a preferred name will be used when there is not a documented business or legal reason to provide a student's primary name. Students may also select a diploma name for graduation and commencement materials.
- Hometown (city, state).
- Campus email address.¹
- Dates of attendance.
- Previous educational institutions attended.
- School/college or division of enrollment.
- Majors, minors and field of study.
- Classification level (e.g., freshman, sophomore, graduate student).
- University-recognized honors and awards.
- Degree status (e.g. expected graduation date and/or conferral dates/terms).
- Enrollment status.
- Employment related to student status (e.g. teaching assistant, resident assistant or work-study) and dates for positions held.
- Participation in officially recognized activities/sports, including height and weight of athletes.
- Photos and videos taken or maintained by the university.

Although these items are designated by CU Denver as directory information, only a limited amount of this information is routinely disclosed by CU Denver university officials. The university retains the discretion to refuse disclosure of directory information if it believes such disclosure would be an infringement on student privacy rights.

Students may ask the University not to publicly disclose directory information. Be aware, however, if you are seeking employment, the Registrar's Office cannot release your enrollment, degree status or major to anyone unless you come to the Registrar's Office with a photo ID.

Forms to prevent disclosure of directory information can be obtained at the Registrar's Office, located in the Student Commons Building, or via the Registrar's website at www.ucdenver.edu/registrar (<http://www.ucdenver.edu/registrar/>).

Information that is never released without your consent includes grades, tuition/fees owed, financial aid, etc. If you would like to give permission to someone else to have access to that information, you can submit a Release of Confidential Information Form to the Office of the Registrar. This form also must be submitted in person.

More information about FERPA can be found in the University Catalog. If you have questions regarding your rights under FERPA, please contact the Office of the Registrar.

Registration Academic Calendar

Consult the official CU Denver Academic Calendar to determine when registration will open and close for each term. CU Denver academic calendars for upcoming semesters can be found on the Lynx Central Registration and Planning web page (<https://www.ucdenver.edu/student/registration-planning/academic-calendars/>).

Add/Drop Deadlines

Please review the current term's academic calendar for the most recent add/drop deadlines by visiting the Registrar's website at www.ucdenver.edu/registrar (<http://www.ucdenver.edu/registrar/>).

For more information regarding the registration process, please see below:

- Registration Process (p. 52)
- Registration for Non-Degree Seeking Students (p. 52)
- Waitlist (p. 52)
- Adding a Course (p. 53)
- Candidate for Degree (p. 53)
- Withdraw (p. 53)
- Auditing (p. 53)
- Enrollment Status (p. 54)
- Intercampus Enrollment (p. 54)

Registration Process

Students should review the sections of this catalog that describe in detail the academic programs available at the Denver Campus.

The registrar's office will send an e-mail message to the student's university-assigned e-mail address, inviting the student to register, including registration information and a registration time assignment. Registration is by time assignment only. Students may register via the web on or after their assigned time.

Enrollment Appointment

An enrollment appointment is a specific time and date at which a student can register for classes through UCDAccess. This enrollment appointment is assigned to a student the semester prior to the term of registration. Students cannot enroll for classes prior to the date and time specified. Enrollment appointment dates are based on the number of academic hours completed. Enrollment appointment times are randomly assigned in fifteen minute timeslots. Students can check the UCDAccess student portal for their specific enrollment appointment date and time. The general progression of registration will start with graduate students, 5th-year seniors, seniors, juniors, sophomore, freshman, and non-degree students. Students who register as soon as their enrollment appointment begins are more likely to find space in the courses they prefer.

Course Load/Restriction

In most cases, students wishing to take more than 18 semester hours (12 in the summer session) must have the overload approved by the dean of their college or school. Consult the individual college or school for specific guidelines as to course-load restrictions.

Web Registration and Student Information

Denver Campus students can register and obtain information regarding their academic and financial records by logging into their **UCD Access portal**.

Online registration allows the student to check the availability of specific courses prior to their registration time and to search for available courses by department, course level, or meeting time. If registration in a course is denied, the reason will be specified in UCD Access.

Student information available online currently includes mailing address verification (or change), admission application status, financial aid information, schedule by semester, grades by semester, unofficial transcript, account balance, online payment and degree audit (for some programs).

Additional information regarding programs, faculty, courses and policies are available through the Graduate School (<https://graduateschool.ucdenver.edu/>).

Registration for Non-Degree Seeking Students

Students who have been matriculated as Main Campus Non-Degree are eligible to enroll in classes that are offered as part of a degree program or as part of Extended Studies. Main Campus Non-Degree Seeking students can register during Open Enrollment, which begins after enrollment periods for degree-seeking students.

Students who have been matriculated as Continuing and Professional Education are only eligible to enroll in Extended Studies classes. Enrollment periods for these courses vary because not all of them meet in accordance with the regular semester. Students should check with the school or department offering the Extended Studies course or program for drop/add deadlines, course details, and eligibility.

Waitlist

If you are eligible to take a class but find that it is closed/full, you may request to be placed on a waitlist (if available) through UCDAccess. Placing your name on a waitlist does not guarantee that you will be enrolled in that class. However, waitlists have proven to be a very effective tool for students wishing to register in closed classes.

You cannot be enrolled in, and/or waitlisted, for classes offered at the same time. You cannot be enrolled/waitlisted for two sections of the same class (except in the case of Special Topics classes). Use the 'drop this class if enrolled' function in UCDAccess to maximize your enrollment choices.

Monitor your status on the waitlist; you will be enrolled in the class if space becomes available. You may attend all classes until you confirm whether or not you are officially enrolled in the class. You are responsible for the tuition if you become enrolled from the waitlist, even if you do not attend. If you do not wish to take the class, you are responsible for dropping it according to the published deadlines in the Academic Calendar (<https://www.ucdenver.edu/student/registration-planning/academic-calendars/>).

Waitlist Positions and Enrollment

When someone drops a closed class, the student who is next in line on the waitlist is automatically enrolled. Schools and colleges reserve the right to make exceptions to manage their waitlists based on unique needs and circumstances. Please check your class schedule on UCDAccess to see if you have been enrolled in the class(es).

CU Online-Waitlisted Courses

You will have access to an online class while you are on the waitlist. While you are waiting for confirmation or denial of enrollment, you may participate in a waitlisted online class. After the first week of class, if you have not been automatically enrolled into the class, you will be dropped.

If you want to be added to a closed class, you must obtain permission from the instructor. Contact CU Online (<https://online.cu.edu/student-support/>) for assistance in contacting the instructor.

Dropping Waitlisted Courses

If you choose not to remain on a waitlist, drop the class as soon as possible. Or if you find that you have been enrolled in a class that you no longer want, drop the class as soon as possible.

Adding a Course

From your registration time assignment to the published Add deadline, you are able to add classes through UCDAccess. If a class is closed/full, you can add your name to the waitlist (if available) through this date. See the Waitlist Policy for more information.

To add a class after the published Add Deadline date to census date, you will need to obtain the instructor's permission by completing the Schedule Adjustment Form found here (<https://www.ucdenver.edu/registrar/student-resources/forms/>).

Adding a Course After Census

To add a class after census, a Schedule Adjustment Form with both the instructor's and dean's signature needs to be submitted to the Office of the Registrar. These deadlines vary for intensive, module, and off-cycle classes.

Candidate for Degree

You must be registered for at least one course during the semester in which you take the comprehensive exam, defend your dissertation or thesis, or present your final project. If you are **not** registered for any other courses, you **must** register for CAND 5940 Candidate for Degree. You may only register for this course once.

To register for CAND 5940 Candidate for Degree (you may **not** be registered for any other courses) obtain the class number from your department or program director. You will be billed at one credit hour of resident tuition plus the CU-SIS fee and the information technology fee. Students registered for CAND 5940 Candidate for Degree will be considered full-time for financial aid and enrollment verification purposes.

Withdraw

Please review the current term's academic calendar for the most recent add/drop deadlines by visiting the registrar's website at www.ucdenver.edu/registrar (<http://www.ucdenver.edu/registrar/>).

Administrative Drop

An administrative drop is implemented by university officials in the registrar's office or the dean's office. A student may be administratively dropped from one or more classes or withdrawn from all classes for any of the following reasons:

- failure to meet certain preconditions, including but not limited to:
 - class cancellations
 - failure to meet course prerequisites
- whenever the safety of the student, faculty member, or other students in a course would be jeopardized
- academic suspension, including but not limited to failure to attain or maintain a required GPA

- as a potential sanction for a violation of the code of student conduct
- disruptive behavior determined by the chair and/or associate dean or Office of Student Conduct and Community Standards to be detrimental to the progress of the course and the education of other students

Outstanding Debt/Administrative Drop Policy

Students who owe a past due debt to the university in excess of \$300 will be administratively dropped from any future terms if past due amount is not paid in full before the Friday prior to the first day of classes of the next term.

To Withdraw from CU Denver

To withdraw from the University of Colorado Denver, students must drop all courses for the semester. Prior to census (see current academic calendar for census date), students must use the web registration system to drop courses. Courses dropped during this period are not recorded on the student's permanent record.

After the census date (see current academic calendar for census date), through the 10th week (fourth week for summer) students may withdraw from their courses using the UCDAccess Portal. Courses dropped during this period will be recorded on the student's permanent record with a grade of W.

Courses dropped during this period will be recorded on the student's permanent record with a grade of W.

Students seeking to withdraw after the 10th week (fourth week for summer) must petition the associate dean of their school or college. A student who stops attending classes without officially withdrawing from the university will receive grades of F for all course work during that term.

Deadlines for dropping module and intensive courses appear in the student portal.

Medical Withdrawal

A student who wishes to withdraw under the Medical Withdrawal Policy must withdraw from all classes. Additionally, international students must contact their assigned International Services Specialist to discuss visa implications associated with withdrawing. Students seeking to withdraw for non-medical reasons will need to review the withdrawal policies and procedures for their respective school or college. For more information, see The Office of Case Management (<https://www.ucdenver.edu/student/health-wellness/case-management/>).

Auditing

To qualify as an auditor for fall, spring or summer semester, a student must be 21 years of age or older or approved by the registrar. Auditors may not be registered for any other University of Colorado courses during the time they are auditing. Auditors are not eligible to audit courses if they are under suspension from the university or have outstanding financial obligations to the university.

The registrar's office does not keep any record of courses audited; therefore, credit for these courses cannot be established. Auditors may attend as many courses as they wish (except those courses with

laboratories or where special equipment is used), provided they have received permission from each instructor.

An auditor's card is issued by the Bursar's Office after classes begin. An auditor's card is non-refundable. Auditors, whether resident or nonresident, pay for three semester hours of resident tuition for all audited courses during the fall, spring and or summer semester for class instruction and library privileges only. Auditors do not receive student parking privileges and are not eligible for other student services. This card should be presented to the instructor upon entering the class. For more information, contact the Bursar's Office (p. 46).

Lifelong Learners Program

Area residents who are 60 years of age or older may attend classes at the University of Colorado Denver on a non-credit/non-tuition basis during the fall and spring semesters.

Note: Each academic department/unit may have its own policy regarding your acceptance into a specific class. Seniors may take any course (offered at the Downtown Campus) listed in the online course schedule except: courses which require laboratory or special equipment use, computer courses, courses offered through the Division of Extended Studies, courses with additional fees, CU online courses, CU Denver South campus or Anschutz Medical campus courses, and intensive and/or module courses (i.e. maymester, 6 week, or hybrid).

Acceptance into a class will be determined by the instructor, based on space availability, and the previous level of education obtained by the senior citizen student. Participants may register for classes beginning on the first day of class. The last day to register for a class via the Lifelong Learners Program is the second Friday after classes begin. Submissions after this day will not be reviewed. A limit of two courses may be taken per semester.

Note: The instructor is **not** required to review written or oral exams, or assignments.

For more information about this program, please visit the Lifelong Learners webpage (<https://www.ucdenver.edu/lifelong-learners/>).

Enrollment Status

Individual students receiving financial aid may be required to complete credits in addition to those listed below. The exact requirements for financial aid will be listed in the student's financial aid award letter.

Undergraduates and Non-degree Undergraduate students:

- Full-time
 - 12 or more credit hours
- Half-time
 - 6 to 11.5 credit hours

Graduate and Non-degree Graduate students:

- Full-time
 - 5 or more credit hours
 - 0 credit hours as a candidate for degree
 - 1 or more credit hours of thesis or dissertation (not master's reports or thesis preparation)

- Half-time
 - 3 to 4.5 credit hours

Notes:

Enrollment verification of full-time/part-time attendance can be certified beginning the first day of class.

Credits used for calculating full-time/part-time enrollment status do not include interinstitutional credits, nor do they include credits from another CU campus, unless the student is enrolled through Intercampus Enrollment (p. 54).

Students receiving veteran benefits should contact the Veteran Student Services manager for the definition of full-time status for summer sessions. Contact information: 303-556-2745 or VMSS@ucdenver.edu.

Individual exceptions to the minimum graduate course-load levels are considered for financial aid purposes by the financial aid committee. Students must file a written appeal with the Office of Financial Aid (<http://catalog.ucdenver.edu/cu-denver/undergraduate/student-finances/>).

Course Load/Restrictions

In most cases, students wishing to take more than 18 semester hours (12 in the summer session) must have the overload approved by the dean of their college or school. Consult the individual college or school for specific guidelines as to course-load restrictions.

Intercampus Enrollment

Intercampus Enrollment with Other CU Campuses

The Intercampus Enrollment Program is open to all CU Denver degree seeking students who are currently enrolled in CU Denver courses. This program helps students fulfill degree requirements so that they may graduate in a timely manner. Students who wish to utilize this program and enroll in courses at the Boulder or Colorado Springs campus concurrently, must meet with their Academic Advisor from their School/College at the Home (Denver) Campus to confirm that the course taken at a Host Campus is equivalent to the course needed to graduate, and to ensure that all required prerequisites/requisites are fulfilled.

Actively-enrolled CU Denver degree seeking students may be eligible for enrollment in up to two (2) courses or six (6) credit hours, whichever is greater, at another CU campus, by submitting the Intercampus Enrollment and Policy Form to the Registrar's Office prior to the Add Deadline date of the Host Campus (Boulder/Colorado Springs). The Intercampus Enrollment and Policy Form can be obtained by accessing the CU Denver Registrar's Office website or by visiting the office in person.

Students who wish to utilize this program must meet the following requirements for eligibility:

- Must be currently enrolled in at least one (1) course at their home campus during the term in which they are seeking enrollment at CU Boulder/CU Colorado Springs.
- Students must have their Academic Advisor confirm that all requisites have been met by the student prior to enrollment in the requested Intercampus course(s).

- Courses requested through the Intercampus Enrollment Program must be Main Campus courses. Continuing Education courses are **not** eligible under any circumstance.
- Some Undergraduate & Graduate Students may be exempt from Home campus enrollment if seeking a degree in the following programs at the campus listed:
 - Applied Mathematics (PhD) - Boulder, Denver
 - Architecture & Planning, (PhD) - Boulder, Denver
 - Civil Engineering, (PhD) - Boulder, Denver
 - Computer Science (MS & PhD) - Boulder, Denver
 - Education Administration (All Careers) - Denver
 - Electrical Engineering - Boulder, Colorado Springs, Denver
 - Geography (MA) - Boulder, Colorado Springs
 - Master of Engineering - Boulder, Colorado Springs, Denver
 - Mechanical Engineering - Boulder, Denver
 - Psychology - Boulder, Colorado Springs, Denver
 - Public Affairs - Colorado Springs, Denver

Enrollment and the dropping of Intercampus Enrollment course(s) can only be performed by the student's Home Campus Registrar's Office.

Students enrolled for course(s) at a Host Campus are responsible for requesting the adding and/or dropping of courses within the host campus's deadlines, published on the Host Campus Academic Calendar.

Any questions regarding this program should be directed to the "Home Campus" Intercampus Enrollment Coordinator within the Registrar's Office.

The University Policy can be found here - <https://www.cu.edu/ope/aps/8002> (<https://www.cu.edu/ope/aps/8002/>)

Grading, Credits, and Exams

For more information about Grading, Credits, and Exams, please refer to the links below.

- Grading System (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/grading-system/>)
- Final Grades (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/final-grades/>)
- GPA Calculation (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/gpa-calculation/>)
- Explanation of Course Numbers (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/explanation-course-numbers/>)
- Explanation of Semester Hours (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/explanation-semester-hours/>)
- Final Examinations (<http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/grading-credits-exams/final-examinations/>)

Grading System

Grading System and Policies

The following grading system and policies have been standardized for all academic units of the university.

Grade Symbols

The instructor is responsible for whatever grade symbol (e.g., A, B, C, D, F, I or IP) is to be assigned. Special symbols (NC and W) are indications of registration or grade status and are not assigned by the instructor. Pass/fail designations are not assigned by the instructor but are automatically converted by the grade application system, as explained under "Pass/Fail Procedure."

Standard Grades	Quality Points
A = superior/excellent	4
A(-) =	3.7
B(+) =	3.3
B - good/better than average	3
B(-) =	2.7
C(+) =	2.3
C = competent/average	2
C(-) =	1.7
D(+) =	1.3
D =	1
D(-) = minimum passing	0.7
F = failing	0

Instructors may, at their discretion, use the **Plus/Minus** system but are not required to do so.

I-incomplete-converted to an F if not completed within one year.

IP-in progress-thesis at the graduate level only.

P/F-pass/fail-P grade is not included in the GPA; the F grade is included; up to 16 hours of pass/fail course work may be credited toward a bachelor's degree.

NC-indicates registration on a no-credit basis.

W-indicates withdrawal without credit.

Incomplete Grade

An I is an incomplete grade. Policies with respect to I grades are available in the individual college and school dean's offices.

An I is given only when students, for reasons beyond their control, have been unable to complete course requirements. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

The instructor who assigns an I sets the conditions under which the course work can be completed and the time limit for its completion. The student is expected to complete the requirements by the established deadline and not retake the entire course.

It is the instructor's and/or the student's decision whether a course should be retaken. If a course is retaken, it must be completed on the Denver Campus or in extended studies classes. The student must re-register for the course and pay the appropriate tuition.

The final grade (earned by completing the course requirements or by retaking the course) does not result in deletion of the I from the

transcript. A second entry is posted on the transcript to show the final grade for the course, with a notation that the course was 'originally graded as I.'

At the end of one year, I grades for courses that are not completed or repeated are changed to an F.

Grade Point Average (GPA)

GPA is computed by multiplying the credit points per hour (for example, B = 3) by the number of semester hours for each course. Total the hours, total the credit points and divide the total points by the total hours. Grades of P, NC, ***, W, IP, and I are not included in the GPA. I grades that are not completed within one year are calculated as F in the GPA.

If a course is repeated, all grades earned are used in determining the GPA. Grades received at another institution are not included in the University of Colorado GPA.

Undergraduate, graduate and non-degree graduate GPAs are calculated separately. Enrollment in a second undergraduate or graduate program will not generate a second undergraduate or graduate GPA.

Students should refer to their academic dean's office for individual GPA calculations as they relate to academic progress and graduation from their college or school.

Sample GPA Calculation

Grade Earned:	Credit Points per Hour:	x Credit Hours:	= Credit Points in Course
A	4.0	4.0	16.0
A-	3.7	4.0	14.8
B+	3.3	4.0	13.2
P	-	3.0	(excluded)
F	0	3.0	0

Total of 15 credit hours with 44 credit points, so $44/15 = 2.93$ GPA

Good Academic Standing

Degree Seeking Students

Students at the University are expected to maintain progress in their degree program, as defined by being in "good academic standing." Good academic standing requires minimally a cumulative grade point average (GPA) of 3.0 on all University of Colorado course work.

Non-degree Seeking Students

Continuation as a non-degree graduate student is contingent upon maintaining an overall GPA of 3.0.

Failure to maintain the required average will result in a non-degree student being suspended. The suspension is for an indefinite period of time and becomes part of the student's permanent record at the university. While under suspension, enrollment at the university is restricted. For more information contact the dean's office of the school / college you are enrolled in.

Final Grades

Grades are normally available within two weeks after the end of the semester and can be accessed by logging into the UCD Access portal.

No Credit

Students may register for a course on a no-credit basis with the consent of their instructor and the dean of their school or college. No grade or credit is awarded. The transcript reflects the name of the course taken and an N/C notation.

Pass/Fail

1. Students who wish to request a course be graded on a pass/fail basis (or to revert from pass/fail to graded status) may do so up until the tenth week of the term for 16-week fall or spring session, or until the withdraw deadline of the eight-week or five-week fall or spring session, or summer session.
2. Up to 16 semester hours of course work may be taken on a pass/fail basis and credited toward the bachelor's degree. Only six hours of course work may be taken pass/fail in any given semester. (**Note:** Individual schools and colleges may have additional restrictions as to pass/fail credits. See the accompanying chart for an overview.)
3. Instructors will not be informed of pass/fail registration. All students who register for a pass/fail appear on the regular class roster, and a normal letter grade is assigned by the professor. When grades are received in the Registrar's Office, those registrations with a pass/fail designation are automatically converted by the grade application system. Courses taken pass/fail will be included in hours toward graduation. Grades of C- and above convert to P+. Grades of D+, D, and D- convert to grades of P. Pass grades (P+ and P) are not included in a student's GPA. An F grade in a course taken pass/fail will be included in the GPA.
4. Pass/fail registration records are maintained by the Registrar's Office.
5. Exceptions to the pass/fail regulations are permitted for specified courses offered by the School of Education & Human Development, the extended studies programs and study abroad programs.
6. Graduate degree students can exercise the pass/fail option for undergraduate courses only. A grade of P+ or P will not be acceptable for graduate credit to satisfy any Graduate School requirement.

Students who register for a course on a pass/fail basis may not later (after the stated deadline) decide to receive a letter grade.

Notes:

- In the event of a transfer, the receiving institution may not accept a P+ grade for transfer credit.
- The pass/fail grading basis is subject to changing as APS 1025 is currently being reviewed.

Final Grades

Final grades are normally available within two weeks after the end of the semester and can be accessed by logging into the UCD Access portal.

GPA Calculation

GPA is computed by multiplying the credit points per hour (for example, B = 3) by the number of semester hours for each course. Total the hours, total the credit points and divide the total points by the total hours. Grades of P, NC, ***, W, IP, and I are not included in the GPA. I grades that are not completed within one year are calculated as F in the GPA.

If a course is repeated, all grades earned are used in determining the GPA. Grades received at another institution are not included in the University of Colorado GPA.

Undergraduate, graduate and non-degree graduate GPAs are calculated separately. Enrollment in a second undergraduate or graduate program will not generate a second undergraduate or graduate GPA.

Students should refer to their academic dean's office for individual GPA calculations as they relate to academic progress and graduation from their college or school.

Sample GPA Calculation

Grade Earned:	Credit Points per Hour:	x Credit Hours:	= Credit Points in Course
A	4.000	4.000	16.000
A-	3.700	4.000	14.800
B+	3.300	4.000	13.200
P	-	3.000	(excluded)
F	0	3.000	0

Total of 15 credit hours with 44 credit points, so $44/15 = 2.930$ GPA

Explanation of Course Numbers

- Courses numbered 1000-2999 are considered lower-division undergraduate.
- Courses numbered 3000-4999 are considered upper division undergraduate.
- Courses at the 5000 level and above are graduate.

Explanation of Semester Hours

The University of Colorado Denver uses a semester system with the academic calendar separated into 3 semesters: Fall, Spring, and Summer.

The University of Colorado Denver is on a semester credit hour system. A credit hour is the numeric measure of the instructional, research and/or other academic work over the length of a semester, and the value of a unit is calculated based upon standard semester credit hour formulas.

For every semester credit hour enrolled, students should expect to spend 2-3 additional hours on school work outside of the assigned class time.

Graduation

School/College Specific Policy

College of Liberal Arts and Sciences

The College of Liberal Arts and Sciences requires the following degree requirements for all graduate degree granting programs outlined below:

All graduate degree programs must follow the Graduate School Policies and Procedures (p. 59).

The Master's degree

Minimum credits 30, at least 24 credits must be completed at 5000 level or above.

If the program has a thesis, research paper or internship option as the culminating requirement, the thesis/research paper must count for three to six (3-6) credits, unless specified otherwise by individual programs.

Independent study course work cannot exceed 20 percent (6 credits) of the 30 credits of coursework required for the Master's degree.

The Doctoral degree

Minimum credits 60, 30 must be coursework related and 30 must be dissertation credits. All courses must be completed at 5000 level or higher. *(All students should check the specific requirements of their Program, since some Programs have adjusted their credit hour requirement to meet national standards)*

The certificate

Graduate certificates require a minimum of 9 credit hours (in any discipline).

No more than 3 credits may be earned at the undergraduate level.

Because a certificate is a CU certification of a student's specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at UC Denver.

Minimum GPA of 3.0 with no course below a B- for a graduate certificate

A single course may not fulfill more than two graduation requirements.

Graduates

Students on the Denver Campus must file an application for candidacy with their graduate school office and complete an intent to graduate application found on the Office of the Registrar's Web page (<http://www.ucdenver.edu/registrar/>) under Degree Planning between the first day of registration for the term and the last day of drop/add. Check with your school for more information. Students will not be officially certified to graduate until a final audit of the student's record has been completed, approximately six weeks after the end of the term. After students have been certified to graduate, they must reapply to return to CU Denver.

Commencement

In early March, informational brochures will be mailed to students eligible to participate in the May spring-semester commencement. In early October, information regarding the December commencement will be mailed to students who graduated in the summer term or expect to graduate in the fall term. Information will be provided about ordering special display diplomas, fittings for caps and gowns and obtaining diplomas and transcripts with the degree recorded. This information is also available at www.ucdenver.edu/student-services/graduation/Pages/Graduation.aspx (<http://www.ucdenver.edu/student-services/graduation/Pages/Graduation.aspx>).

Transcripts

The official transcript includes the complete undergraduate and graduate academic record of courses taken at all campus locations or divisions of the University of Colorado. It contains the signature of the registrar and the official seal of the university.

Official transcripts with posted grades for any given semester are available approximately three weeks after final exams. A transcript on which a degree is to be recorded is available approximately eight weeks after final exams.

For Denver Campus students, transcripts may be ordered through the online ordering portal by visiting www.ucdenver.edu/transcripts (<http://www.ucdenver.edu/transcripts/>).

Transcripts are prepared when a student submits an order online. A student with financial obligations to the university that are due and unpaid will not be granted a transcript. The official PDF transcript is delivered within twenty-four hours, and mailed transcripts are processed within one business day. Rush service is available and processed within one business day.

Glossary of Terms

Census

The date in which enrollment is considered finalized for the term/semester. After this date, full tuition is assessed for any new courses added to a student's schedule or withdrawn courses.

Credit or Semester Hour

The unit of measurement for college credit. For each credit hour earned, you will spend approximately 50 minutes per week in class. You will also hear credit hours referred to as "hours" or "credits."

College or School

An individual degree-granting unit within the University.

At CU Denver, there are seven undergraduate school and colleges:

- Architecture and Planning
- Arts and Media
- Business
- Education and Human Development
- Engineering and Applied Science
- Liberal Arts & Sciences
- Public Affairs

All of which are part of the University of Colorado Denver. Regardless of what school or college a student has been admitted to, they are a CU Denver student.

Course Drop

Dropping one or more courses, but not all, within a specific term **prior** to census. Dropped courses are not reflected on the student's transcript.

Course Withdrawal

Dropping one or more courses, but not all, within a specific term **after** census. When students withdraw from a course, the course earns a grade of "W," which will be reflected on the student's transcript, but does not affect a student's GPA.

Full Time/Part Time Enrollment

To be a full time graduate student, you must be registered for at least 5 credits. Part time enrollment is anything below 5 credits. Full time/part time status does not relate to how many days per week you come to campus for classes. Full time/part time status is defined differently for graduate students.

Grade Point Average

The grade point average (GPA) is calculated by multiplying the credit hours for the course by the points for the letter grade, totaling all the

credit points and dividing them by the number of credit hours included. Pass grades and no-credit courses are not included in a student's GPA.

Student's University of Colorado GPA will not include courses that have been taken at other institutions prior to enrollment at the University of Colorado. The GPA for undergraduate students includes all courses taken as an undergraduate. This includes all grades for courses taken more than once.

Hold

A hold is a service indicator that prevents registering for classes and receiving an official transcript and/or diploma. A hold can be placed on a student's record for a variety of reasons that may include financial, health, academic standing, required documentation, and advising. Students can view holds in the UCDAccess student portal. Students should contact the appropriate department to resolve the hold in a timely manner.

Incomplete Grade

Policies with respect to "I" grades are available in the individual college and school dean's offices. Use of the "I" is at the discretion of the course instructor and/or the academic dean's office. Please see the Grades definition for more information.

Independent Study

An academic experience created collaboratively with a faculty member. A student and a faculty member would decide the work to be produced, the hours dedicated to the study, the outcomes for the experience, and the credits earned for the study.

Requisites

Prerequisites

A course that needs to be taken prior to registration for the next course in the designated sequence.

Co-requisites

A course(s) that must be completed concurrently, in the same semester, with another course. Some schools and colleges may allow students to complete corequisites before enrolling in a concurrent course.

Restrictions

Restricted to a specific population (i.e. Restricted to MUSC majors, Restricted to junior standing, etc.)

Repeat

A course students may have re-enrolled in after completing the same course with a D- or higher. If a student has earned credit for a course already and chooses to re-enroll in the same course, the student will not earn additional credit.

Semester/Term Withdrawal

Dropping all courses within a specific semester or term. When students withdraw from all courses, each course earns a grade of "W," which will be reflected on the student's transcript, but does not affect their GPA. A term withdrawal note is also reflected separately on the transcript.

Graduate School Policies and Procedures

Because each program operates differently within the scope and boundaries set by the Graduate School Policies & Procedures, each graduate program should have its own handbook or other similar resource that describes what is expected of its students. The Graduate School Policies & Procedures provide a foundation of minimum requirements, but programs are free to set higher expectations, provided those expectations are clearly communicated and applied equitably.

Please click here (https://www.ucdenver.edu/docs/librariesprovider138/denver-anschutz-graduate-school/resources/graduate-school-policies-and-procedures.pdf?sfvrsn=d00622b9_2) to view the general Graduate School Policies & Procedures.

For information regarding University and Campus wide policies, please click here (p. 33).

Listed below are all the schools/colleges and programs that are governed by the Graduate School Policies & Procedures:

Business School

- Computer Science and Information Systems PhD¹

College of Architecture and Planning

- Geography, Planning, and Design PhD
- Historic Preservation MS
- Urban and Regional Planning MURP

College of Arts & Media

- Recording Arts MSRA
- Media Forensics MS

College of Engineering, Design and Computing

- Bioengineering MS
- Bioengineering PhD
- Civil Engineering MS
- Civil Engineering MENG
- Civil Engineering PhD
- Computer Science & Information Systems PhD
- Computer Science MS
- Electrical Engineering MS
- Electrical Engineering MENG
- Engineering and Applied Science PhD
 - Offered in civil engineering, computer science & engineering, electrical engineering and mechanical engineering
- Mechanical Engineering MS
- Mechanical Engineering MENG

College of Liberal Arts & Sciences

- Anthropology MA
- Applied Geography & Geospatial Science MA
- Applied Mathematics MS

- Applied Mathematics PhD
- Biology MS
- Chemistry MS
- Clinical Health Psychology PhD
- Communication MA
- Economics MA
- English MA
- Environmental Sciences MS
- Health and Behavioral Science PhD
- Health Economics MS
- Health Economics PhD
- History MA
- Humanities MH
- Integrated Sciences MIS
- Integrative and Systems Biology PhD
- Political Science MA
- Social Sciences MSS
- Sociology MA
- Spanish MA
- Statistics MS

School of Education and Human Development

- Education and Human Development PhD
- Leadership for Educational Equity EdD
- School Psychology PsyD

School of Public Affairs

- Criminal Justice MCJ
- Public Affairs PhD

¹ Not offered for the Fall 2021 - Spring 2022 academic year

Academic Probation and Suspension Policies

Academic probation and suspension policies vary by school/college. If your program falls under the auspices of the Graduate School, please see the Graduate School Policies and Procedures (https://www.ucdenver.edu/docs/librariesprovider138/denver-anschutz-graduate-school/resources/graduate-school-policies-and-procedures.pdf?sfvrsn=d00622b9_2). Otherwise, please contact your individual school/college for more information.

Schools, Colleges, and Departments

Denver Campus

With a solid academic reputation and award-winning faculty, the Denver Campus offers Graduate programs through eight distinct academic units.

- Business School (p. 60)
- College of Architecture and Planning (p. 128)
- College of Arts & Media (p. 173)
- College of Engineering, Design and Computing (p. 181)

- College of Liberal Arts and Sciences (p. 232)
- School of Education & Human Development (p. 414)
- School of Public Affairs (p. 486)

Business School

Leadership

Dean

Scott Dawson

Associate Deans

Jahangir Karimi, Associate Dean of Faculty, Staff and Operations

Ronald Ramirez, Associate Dean of Programs

Assistant Deans

Connie Amen, Assistant Dean of Finance and Human Resources

Shane Hoon, Assistant Dean of Student Success

Chief of Staff

Malena Brohm

Contact

Dean's Office

Business School Building

1475 Lawrence Street

Denver, CO 80202

303-315-8000

Fax: 303-315-8040

Mailing Address

The Business School

Campus Box 165

P.O. Box 173364

Denver, CO 80217-3364

Website: <http://business.ucdenver.edu>

Admissions/Advising

Undergraduate: 303-315-8110

Graduate: 303-315-8110

Overview

Located in the heart of the Rocky Mountain business community, the Business School at the University of Colorado Denver prepares students with the knowledge and skills necessary to become effective, responsible business professionals. We're able to achieve a standard of excellence by bringing together nationally recognized faculty and highly motivated, mature students in an intellectually challenging academic environment. CU Denver's Business School is a research institution. Because our faculty are nationally recognized for scholarly research as well as for their teaching skills, our students have the opportunity to be on the leading edge of business management theory and practice. Our class schedules and curriculum offer flexibility to meet your needs whether you plan to attend full or part time, day or evening. Whether you're an experienced working professional seeking an advanced degree or preparing for a new career in the business world, you'll gain the knowledge and perspective necessary to succeed in today's challenging business environment.

Educational Goals

The Business School is committed to superb teaching, connecting theory to practice that focuses on:

- current and relevant knowledge and skills necessary for success in the highly competitive global business environment
- experience in cooperative and team-based work skills
- integrated professional and functional expertise
- sensitivity to cultural and ethnic diversity

Our graduate programs serve both traditional and nontraditional students who have extensive work experience. The MBA serves the needs of students who desire a general business education. The professionally oriented MS degrees serve the needs of students who desire greater specialization, particularly students who have already obtained an undergraduate business degree. Large numbers of our graduate students will be drawn from national and international locales.

Our undergraduate program, which serves both traditional and nontraditional students, leads to a baccalaureate degree in business with a liberal arts component. The program is closely linked, through articulation agreements, to lower-division programs offered by Colorado's four-year and community colleges.

Key elements of our academic programs are the provision of top-quality career advising and placement services, as well as flexible schedules and programs to meet a wide range of student needs. We are committed to assisting our students' efforts to pursue rewarding careers.

Faculty

Our nationally recognized faculty members are vigorous and enthusiastic about teaching and research. Faculty members hold degrees from the nation's leading business schools, including Berkeley, Harvard, Stanford, University of Chicago, University of Pennsylvania, UCLA and Yale. Many of them also bring years of valuable experience in private industry. Their interdisciplinary expertise, academic achievements, scholarly research and business experience provide students with a dynamic learning environment.

Scholarships and Financial Aid

Many programs for financial aid are administered by the Office of Financial Aid (p. 47). Call 303-315-1850 for detailed information.

Thanks to the generous support of the Colorado business community and others, the Business School has a significant number of scholarships to offer its students. Scholarships are awarded on the basis of merit and/or financial need. The amount of the award and the number of awards available vary.

Over 30 different scholarships are available to eligible Business School students, with multiple awards from most scholarships.

Further information about these scholarships, including eligibility criteria and application forms, may be obtained by visiting the Financial Aid & Scholarships website (<https://www.ucdenver.edu/student-finances/scholarships/>), by calling 303-315-1850, or by viewing scholarship information on the Business School website (<https://business.ucdenver.edu/>).

Study Abroad

Transfer credit from study abroad programs requires prior written approval from the Assistant Dean. Students must meet with a business staff advisor to determine course acceptability prior to the semester in which they intend to study abroad. Information on the various programs is available at the Office of International Affairs (p. 44).

Institute for International Business

CU Denver's Institute for International Business (IIB) was created in 1988 by the Board of Regents of the University of Colorado to serve as a center for the advanced study and teaching of international business (IB). The US Department of Education designated the IIB as a Center for International Business Education and Research, a prestigious center of excellence award that it has competitively held since 1993. CU Denver is one of only 15 CIBERs in the United States and the only one in Colorado. Among others, the IIB/CIBER promotes interdisciplinary and multi-campus collaboration at the University of Colorado; hosts monthly International Executive Roundtable lectures focused on global competitiveness; and sponsors IB development programs, conferences and workshops for faculty and the business community in Colorado, the Rocky Mountain region and the United States. The IIB/CIBER works closely with CU Denver's Business School in advancing its international business programs and research, as well as other colleges, schools, and departments at CU to promote various internationalization initiatives. Call 303-315-8884 or visit the IIB website at www.ucdenver.edu/institutes/international-business (<http://www.ucdenver.edu/institutes/international-business/>) for more information.

Academic Programs

A carefully designed curriculum to prepare students for success in business administration is available for the student seeking either an undergraduate or graduate degree. The school offers courses leading to the bachelor of science in business administration (BSBA), master of business administration (MBA), and the master of science (MS) degrees.

As an undergraduate student, it is possible to pursue two major simultaneously or consider a major and a minor.

It is possible to pursue two graduate degrees simultaneously, such as an MBA and an MS, or two MS degrees, through our dual degree programs (p. 62). In addition to the programs in the Business School itself, we partner with other university departments to offer dual programs in MS finance and risk management/economics and the MBA in combination with graduate programs in architecture, bioengineering, economics, political science, urban planning and the MD.

Graduate Business Programs (MBA/MS)

Associate Dean: Ronald Ramirez
303-315-8110
Fax: 303-315-8199
E-mail: bschool.admissions@ucdenver.edu

The Business School offers programs leading to the master of business administration and the master of science in specific fields of business.

The MBA, executive MBA, MS and BS degrees in business are accredited by AACSB International, the Association to Advance Collegiate Schools of Business. The health administration MBA degree is also accredited by the Commission on Accreditation of Healthcare Management Education

(CAHME). In addition, the accounting programs have earned a separate AACSB International accreditation.

For a list of graduate business programs, see Program Curricula (p. 64) below.

Master of Business Administration Programs

The master of business administration (MBA) program provides a general background in management and administration. This background enables the student to have the breadth of exposure and depth of knowledge required for an advanced-level management career. The program is devoted to developing the concepts, analytical tools and communication skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The professional MBA program allows the scheduling of classes with maximum flexibility so students can progress through the program at their own pace, by taking as little as one class per semester or possibly up to five classes per semester, at times that are convenient to their work schedule. The program can be completed in as little as 16 months or as long as five years plus one semester.

Online and hybrid courses add additional flexibility. Students may complete all degree requirements online, or combine online, hybrid, and campus courses to fit a business travel schedule or personal learning style. All the core courses are offered online in the fall and spring terms, with limited online offerings in the summer semester. Your choice of online and hybrid electives and specializations is limited.

The MBA program is also available in different configurations: One Year (full time, see relevant section), fully online, health administration and the executive MBA (see relevant section). All MBAs have the same curriculum requirements; they differ only in their focus, the choice of electives, the flexibility of course scheduling and the time required to complete the program. The One Year and executive MBAs are lockstep programs, where all the students complete all program requirements together. No course transfers, waivers or substitutions are permitted in the lockstep programs.

For a list of MBA programs, see Program Curricula (p. 64) below.

Master of Science Programs

Master of science degrees (MS) are offered in the fields of accounting, business analytics, finance and risk management, global energy management, information systems, international business, management, marketing, and taxation.

The MS degree affords the opportunity for specialization and depth of training within a particular field. The specialization and expertise developed within the MS program prepares the student for more specialized staff positions in industry, the nonprofit sector and government.

The course requirements for the MS degree in each of the fields are divided into different components - graduate core and elective requirements. The graduate core and elective courses require at least 30 semester hours of graduate-level coursework.

No comprehensive exams are required.

For a list of graduate MS programs, see Program Curricula (p. 64) below.

Dual Degree Programs

Dual degree program options within the Business School include:

- MBA/MS (p. 114)
- MS/MS (p. 116)
- MBA/MD (p. 114)
- MBA/MS in Bioengineering (p. 125)
- MBA/MURP (Urban and Regional Planning) (p. 114)
- MBA/Political Science (p. 388)

Please be aware that admission into one of our programs does not guarantee admission into another program. If adding a dual, you must meet the admission requirements for both programs. All programs have their own unique admissions requirements. Graduation from one program does not guarantee admission into another program.

Executive Programs

Program Director: Roger Japp
303-315-8015
Email: roger.japp@ucdenver.edu

Executive MBA

Faculty and Resources

The Executive MBA (EMBA) faculty are drawn from senior Business School faculty and regionally and nationally recognized faculty from other universities. Our EMBA faculty are also noted for their practical managerial experience and a demonstrated ability to work with executive and managerial level students. Concierge level services are provided to all students to include: registration for classes, purchase of all textbooks, graduation application and payment services. Students are also provided with professional career counseling and development services by a third party vendor.

Admission Requirements

The Executive MBA program is designed for experienced business professionals who have 8 to 10 years' experience in a decision-making position. In the selection process, significant attention will be given to the depth and breadth of the candidate's experience, progression in job responsibility, total work experience and the ability to benefit from this integrative classroom/work environment. The admissions committee will base its decision on the application, former academic record, relevant test scores if applicable, the employer's nominating letter, other letters of recommendation and a personal interview.

Executive MBA in Health Administration

FACULTY AND RESOURCES

Faculty are nationally recognized, and all possess both practical managerial experience and a demonstrated ability to work effectively with executive-level students. Faculty are comprised of University of Colorado Denver Business School faculty and nationally recognized experts from academia and industry. Concierge level services are provided to all students to include: registration for classes, purchase of all textbooks, graduation application and payment services. Students are also provided with professional career counseling and development services by a third party vendor.

ADMISSION REQUIREMENTS

The Executive Health MBA program is designed for health-care professionals who have 5 or more years' experience in healthcare. In the selection process, significant attention will be given to the depth and breadth of the candidate's experience, progression in job responsibility, total work experience and the ability to benefit from this integrative classroom/work environment. The admissions committee will base its decision on the application, former academic record, relevant test scores if applicable, the employer's nominating letter, other letters of recommendation and a personal interview.

Extend Your Education

Whether you are looking to advance in your current field or prepare for an entirely new career, the Business School offers opportunities to meet your goals.

A variety of classes and programs are available to community members and alumni. Classes are taught by expert faculty or influential members of the Denver business community, imparting knowledge that is readily applicable in the field.

Entrepreneurship

The Jake Jabs Center for Entrepreneurship offers programs for those looking to start a new venture or enhance their entrepreneurial skills. See the college website for more information.

Certificate Specialization Programs

Modern career paths are flexible, so it's beneficial to have a flexible degree. If you already have a graduate business degree from an AACSB accredited school, the CU Denver Business School allows you to add specialized knowledge through our post-graduate certificates. See the college website for more information.

Course List for the Business School

Click here (p. 68) for a list of courses offered by the Business School.

Business School Admissions Information

Application Deadlines

Graduate

Fall

- Domestic applications April 15
- International applications March 15

Spring

- Domestic applications October 15
- International applications September 15

Summer

- Domestic applications February 15
- International applications January 15

Applications received after these dates may not be eligible for scholarships.

One Year MBA – fall admit only.

- Domestic Applicants = Round One – December 15, Round Two – February 15, Round Three – April 15, Round Four – May 31.
- International Applicants = Round One – December 15, Round Two – February 15, Round Three – April 15, Round Four – May 15.

Requirements for Admission to the MBA and MS Programs

Admissions/Advising

Persons contemplating graduate study are encouraged to learn about admission and program requirements by scheduling an appointment with our recruiting staff or attending one of the regularly scheduled prospective student information meetings. Call 303-315-8110 to schedule an appointment.

Admission to the graduate programs in business is granted only to students showing high promise of success in graduate business study. Admission is based on the following indicators of the candidate's likelihood to succeed in the program.

Academic Record

The bachelor's degree must be earned from a regionally accredited university. The total academic record is considered, including the GPA, the course of study, and the quality of the program.

Required Testing

The GMAT or GRE is required for admission consideration for any applicant who does not have a previously awarded master's degree. GMAT waivers are available on a case-by-case basis and can be requested while completing the online application. The GMAT or GRE is administered at numerous centers throughout the world.

For more information about the GMAT, please visit www.mba.com (<http://www.mba.com/>). The code numbers for CU Denver's graduate business programs are as follows:

MBA: MPB-OG-78
One Year MBA: MPB-OG-65
MS: MPB-OG-75
PhD: MPB-OG-29

GMAT is preferred for all the graduate business programs. Students may submit a GRE score for any of the graduate degree programs, but the decision to accept the GRE is on a case by case basis. If you have not taken either the GMAT or the GRE, we strongly recommend the GMAT. GMAT waivers are available on a case-by-case basis and can be requested while completing the online application. GMAT waivers are primarily considered based on a previous graduate degree and/or considerable work experience. Other graduate admission exams such as the MCAT and LSAT may also be considered, but, some programs will not accept either. See individual program information for specifics. The MS in business analytics program does not accept the LSAT or MCAT in place of the GMAT or GRE without extensive verifiable evidence of the student's prior mathematical preparation and coursework. For more detailed information on admissions requirements, phone the graduate programs office 303-315-8211 or email them at: bschool.admissions@ucdenver.edu.

Work Experience

While we do not require work experience, a record of appropriate employment at increasing levels of responsibility is considered a positive

indicator of the likelihood of successful completion of graduate work. A resume must be submitted with the application materials.

Background Requirements

Students applying for graduate programs in business **do not need an undergraduate degree in business**. The MBA program is specifically designed so that the required courses cover the material needed for completion of the degree. There are no prerequisites needed to start the MBA program. Students with non-business backgrounds have completed the program successfully. However, applicants for some of the MS degrees may be required to take background or common body of knowledge business courses, depending on the individual's academic background. For more detailed information on which background courses may be needed refer to the individual program information in this catalog or on our website, or phone the graduate programs office to schedule an appointment with a graduate academic advisor, 303-315-8110 or email the advisors at: grad.advising@ucdenver.edu.

It is expected that students have an adequate level of personal computer proficiency in a word processing and spreadsheet software, as well as a good working knowledge of basic algebra and English grammar.

Letters of Recommendation

Some programs require letters of recommendation while others do not. Please see individual graduate program details for specifics.

The Admission Process

Mailing address for applications:

Graduate Admissions
The Business School
University of Colorado Denver
Campus Box 165, P.O. Box 173364
Denver, CO 80217-3364

Students seeking admission to the One Year MBA, MBA with an emphasis in health administration, or executive programs should consult with the relevant catalog sections for additional application criteria or requirements.

Domestic Application Requirements

- Complete parts I and II of the application for graduate admission and the four essay questions.
- Have required GMAT or GRE scores sent directly to the graduate business admissions office from the testing centers. The code for CU Denver's graduate business programs are as follows:

MBA: MPB-OG-78
One Year MBA: MPB-OG-65
MS: MPB-OG-75
PhD: MPB-OG-29

- Have one official transcript (not student copies) mailed directly from each school, college, and university ever attended past high school. Transcripts must be sent even if credit course work completed was not part of a degree program or was taken after an undergraduate degree was earned.
- Resumé
- Application fee: \$50 for domestic applicants/\$75 for international applicants for the MBA or MS programs. Personal interviews are not required, except for the One Year MBA and the MBA in health administration. You will be contacted to schedule the interview.

Deadlines. To be considered for admission, applicants for graduate programs must submit all materials prior to the following dates:

Fall

- Domestic applications April 15
- International applications March 15

Spring

- Domestic applications October 15
- International applications September 15

Summer

- Domestic applications February 15
- International applications January 15

The One Year MBA option only admits students each fall. The application deadline for the One Year MBA are the following.

- Domestic Applicants = Round One – December 15, Round Two – February 15, Round Three – April 15, Round Four – May 31.
- International Applicants = Round One – December 15, Round Two – February 15, Round Three – April 15, Round Four – May 15. Business School Admissions Information

Early applications are encouraged because, if admitted, the student receives priority for registration time assignment. Applications received after published deadlines with complete supporting documentation, scores, fees and transcripts will be considered; however, those students may not meet scholarship deadlines and in some cases, course availability is limited for the later applicants.

International Application Requirements

See International Students (p. 45).

Programs

- Accounting, MS (p. 108)
- Business Administration - Health Administration, MBA (p. 109)
- Business Administration, MBA (p. 110)
- Business Administration/Business, MBA/MS (p. 114)
- Business Administration/Medicine, MBA/MD (p. 114)
- Business Administration/Urban and Regional Planning, MBA/MURP (p. 114)
- Business Administration: One Year MBA (p. 114)
- Business Analytics, MS (p. 116)
- Business/Business, MS/MS (p. 116)
- Executive MBA in Health Administration (p. 116)
- Finance and Risk Management, MS (p. 117)
- Finance/Economics, MS/MA (p. 118)
- Global Energy Management, MS (p. 118)
- Information Systems, MS (p. 119)
- International Business, MS (p. 120)
- Management and Organization, MS (p. 122)
- Marketing, MS (p. 123)
- Master in Business Administration for Executives, MBA (p. 125)
- MBA/MS in Bioengineering (p. 125)
- Taxation, MS (p. 125)

Certificates

- Bioinnovation and Entrepreneurship Certificate (p. 126)
- Commodities Certificate (p. 126)
- Entrepreneurship Certificate (p. 127)
- Graduate Certificate in Risk Management (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/business-school/business-administration/risk-management-insurance-certificate/>)
- Post-Graduate Certificates (p. 128)
- Sustainability Certificate (p. 128)

Business School Policies

General Academic Policies

Academic policies that apply to all students at CU Denver are described in the Office of the Registrar website and in the Academic Policies (p. 59) and University Policies (p. 59) sections of the catalog.

The policies outlined on the following pages are relevant for both undergraduate and graduate students in the Business School. Individual policies appropriate only to undergraduate or graduate students are described under separate headings. Each student is responsible for knowing and complying with the academic policies and regulations established for the school. The school cannot assume responsibility for problems resulting from a student's failure to follow the policies stated in this catalog. Similarly, students are responsible for all deadlines, rules and regulations stated on the student portal.

Academic Ethics

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, falsification of official records and similar acts or any attempt to engage in such acts are grounds for suspension or expulsion from the university. In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own. It is recommended that students consult with the instructors as to the proper preparation of reports, papers, etc., to avoid this and similar offenses. Also, actions that disrupt the administrative process, such as misrepresentation of credentials or academic status, other forms of deception or verbal abuse of university staff are grounds for suspension or probation. All discovered acts of dishonesty must be referred to the Business School's Internal Affairs Committee.

Admission to Business Courses

Enrollment in business courses is limited to students who have been admitted to business degree programs and to other students as described in the separate undergraduate and graduate policy sections. The course registration criteria are designed to meet a number of objectives:

- to assure access to business courses for students admitted into a business degree program
- to serve students in other colleges who have business-related education objectives or requirements
- to serve nondegree students who have specific career or education goals

Refer to the student portal (<https://login.ucdenver.edu/signin.html>) each term for course availability and prerequisites.

Attendance Regulations

Students are required to attend classes, including online classes, on a regular basis. Absences must be arranged with the instructor and must conform with university and instructor policies on attendance. When possible alert your instructor prior to the absence.

Prerequisites

Students are expected to know and fulfill all prerequisites when registering. Prerequisites are in place for the benefit of the student. The Business School wants our students to have the best experience in their courses, and having the prerequisites for a course ensures that you are ready for the material that will be covered. See course listings in the schedule planner for relevant prerequisites as many are strictly enforced. The Business School reserves the right to administratively drop students who enroll without the correct prerequisites. This action may result in the loss of tuition.

Course Numbering

The course numbering system used at CU Denver identifies the class standing required for enrollment. Students are expected to take 1000-level courses in their freshman year, 2000-level courses in their sophomore year, 3000-level courses in their junior year and 4000-level courses in their senior year. Courses at the 5000 and 6000 level are restricted to master's-level business students, and courses at the 7000 level are restricted to PhD students.

Adding Courses

Students may add courses to their original schedule through the census date (first 12 days of the fall or spring regular semester; first eight days of the fall or spring semester – 8 week sessions and the summer session). Instructor and Dean's signature is required to add a business course after census date for regular semester. No option to add a course after census date for 8-week session courses.

Dropping Courses

Students may drop a course through the census date (first 12 days of regular semester) and it will not appear on the transcript. After census, and through the 10th week of a regular semester a student who wishes to drop a course may do so through the student portal without instructor or dean signatures. The course and a grade of *W* will appear on the transcript. Beginning the 11th week of a regular semester, a student who wishes to drop must obtain written approval from both the instructor and assistant dean or designate. The course and a grade of *W* will appear on the transcript and full tuition is charged. In order to drop after the 10th week, it will also be necessary to document circumstances beyond a student's control and complete the appropriate late withdrawal petition form. Any student who is failing a class will not be allowed to drop simply because of their grade. See the academic calendar (<https://www.ucdenver.edu/registrar/>) for deadlines and costs involved and for drop information for other terms. Contact the advising offices for the forms needed to drop after the 10th week of the regular semester terms.

For 8-week courses:

Students may drop a course through the census date (first eight days of an 8-week session) and it will not appear on the transcript. After census, and through the 5th week of an 8-week session course a student who wishes to drop a course may do so through the student portal without instructor or dean signatures. The course and a grade of *W* will appear

on the transcript and full tuition is charged. See the academic calendar (<https://www.ucdenver.edu/registrar/>) for deadlines and costs involved and for drop information for other terms.

Withdrawal

See the Office of the Registrar (<http://catalog.ucdenver.edu/cu-denver/graduate/registration-records/>) chapter of the catalog and website for university-wide withdrawal policies. Note that after the 10th week of the regular semesters or the 5th week of the 8-week sessions, the Business School normally requires instructors' signatures on withdrawal forms before the assistant dean's approval is granted. If a Business student is dropping all courses in a particular semester, the student must complete a petition to withdraw form and submit to the assistant dean or designate for signatures. It will also be necessary to document circumstances beyond a student's control with the petition.

Administrative Drop

The school reserves the right to administratively drop students who are incorrectly enrolled in business courses. While we do our best to administratively drop students prior to the census date to avoid tuition charges, time may not always allow for that timeline and tuition charges may apply.

Note that students who never attend class are not automatically dropped from the course. The student is responsible for dropping courses and failure to do so will result in a tuition charge for the class and an "F" grade.

Appeal Procedure

Students may contact an advisor in the Business School's programs office (303-315-8110) for appeal and petition procedures pertaining to rules and regulations of the school.

Grade Appeal Procedure

Students must follow the process below.

- If the issue is not resolved after a conversation with the faculty member, discuss concerns with the Discipline Director.
- If the issue is not resolved after a conversation with the Discipline Director, discuss concerns with the Associate Dean of Programs.

Neither the Dean, nor any director, will offer an opinion with respect to the qualitative assessment of a student's work, but, may consider whether the procedures used to determine a grade were consistent with the syllabus and written amendments to the syllabus. No passing grade will be changed after one year. Requests for grade adjustments/appeals must be made in the semester immediately following the semester in which the disputed grade was earned. Students may reach out to the advising office to determine the names and contact information of the appropriate Discipline Directors and/or Associate Dean by emailing undergrad.advising@ucdenver.edu or grad.advising@ucdenver.edu or by calling 303.315.8110.

General Grading Policies

For undergraduate students pursuing a BSBA, a 2.0 cumulative GPA in both campus and Business courses must be achieved to graduate. If the required cumulative GPAs are not maintained, the student will be placed on academic probation. While on probation, the student will need to follow the guidelines outlined by campus and the Business School in order to continue their education. Contact an advisor for details. The Business School cannot confer the degree if the required GPAs are not met.

For graduate students pursuing an MBA or an MS, a minimum cumulative graduate business GPA of 3.0 or higher must be achieved and maintained for courses taken toward a graduate business degree. All CU Denver graduate business courses are computed in the graduate business cumulative GPA, regardless if the coursework pertains to the current degree or if the courses were taken as a graduate non-degree seeking business student. Transfer hours and grades from other institutions and/or from University of Colorado courses taken on the Boulder Campus, Colorado Springs Campus, or the Anschutz Medical Campus, are not computed in the business GPA. However, degree credit may be awarded for those transfer courses through a petition process. If the required cumulative GPA does not meet the minimum requirement of 3.0 or higher, the student will be placed on academic probation.

PLUS/MINUS GRADING

Faculty have the option to use plus/minus grading.

INCOMPLETE GRADES

The only incomplete grade given in the school is an *I*. An *I* grade is assigned only when documented circumstances clearly beyond the student's control prevent completion of course requirements (exams, papers, etc.). Students must sign a contract outlining how they will make up the missing work with the instructor giving the *I*. If an *I* is assigned, students do not register for the course a second time. Instead, they work with the faculty member to make up the remaining requirements. All *I* grades must be made up within the contract period (which may not exceed one year), or the *I* will automatically be changed to the grade of *F*.

The student is responsible for contacting the instructor to schedule the completion of the coursework.

GRADE CHANGES

Grades as reported by instructors are final. Grade changes will be considered only in cases of documented clerical errors, approved grade appeals, or when a student is making up an incomplete grade (*I*). All changes must be made within one year after the course has been taken, unless highly unusual circumstances can be documented and the change has been approved by the school.

PASS-FAIL OR NO CREDIT (AUDIT)

With the exception of internships, experiential learning and travel study courses, the Business School does not permit the election of pass-fail grading for any business course required for the student's degree. Students are not allowed to audit business courses.

Academic Policies for Graduate Students Advising

As soon as possible, after being admitted, students should schedule an appointment with a graduate advisor to discuss general degree requirements and determine if any background course work may be required and/or what prerequisites might be waived for the MS degrees. Call 303-315-8110 to schedule an appointment or email grad.advising@ucdenver.edu.

Degree Plan

All students are encouraged to meet with a graduate advisor during their first semester to review their degree plan. Students are also encouraged to meet with a graduate advisor throughout their program to ensure the correct sequencing of courses. In order to ensure that registration

runs smoothly, an advising hold will be placed on newly admitted students in our MS in Accounting and our MS in Taxation programs. Those students must schedule a time to meet with an advisor prior to registration in their first semester. Call 303.315.8110 to schedule an appointment.

Course Load

The normal course load for full-time graduate students is 9-12 semester hours. However, because many students are also pursuing a career, it is possible to attend classes on a part-time basis by enrolling in 3-6 semester hours. For financial aid purposes, 5 semester hours of graduate study is considered full time during the fall and spring terms and 3 semester hours for the summer term. Graduate courses are scheduled primarily in the evening or online to accommodate work schedules.

Transfer of Credit

Upon approval of the program specific director, a maximum of 12 semester hours of graduate business course work may be transferred to the MBA and 9 semester hours for the MS degrees (9 semester hours for each the MBA and MS degree for a dual MBA/MS degree program). Note: 1. For the MS in business analytics only 6 semester hours may be transferred into the program and 2. For the MBA- Health Administration program transfer credit must be from an AACSB and/or CAHME accredited institution depending on the course. Courses must have been taken from another AACSB accredited graduate school of business or one of the top 200 universities in the country and courses must have been completed within the last five years with a grade of at least B (not B-). No transfer courses will be accepted if they have been used to satisfy degree requirements of a previously awarded degree. Graduate business courses taken at other University of Colorado Business Schools are considered transfer hours and are included in the transfer limit. Transfer of quarter hours of graduate business credit may satisfy a course requirement, but may not satisfy the total number of hours required. One-quarter hour equals .667 semester hour.

Transfer to Another Business School Program

Because admission standards vary between degree programs, students who wish to transfer from one CU Denver Business School degree program to a different Business School degree program must meet the admissions standards for the program they wish to apply. There are no automatic transfers between programs and admission into one program does not guarantee admission into another program. Also, graduation from one program does not guarantee admission into another program because the admissions standards vary between programs.

Time Limits

Master's students are required to complete all degree requirements within five years and one semester (seven years and one semester to earn dual MBA/MS or MS/MS degrees, or a PhD). Courses completed outside of these time limits will not be accepted toward the degree without an approved petition. Time-limit extensions are given only for external situations that restrict a student's ability to complete the program in a timely manner. If you do not take graduate business courses for more than three consecutive semesters, you will need to reapply for admission and meet the admission standards in place for the new application term. At the time of re-admission, your time limit will also be evaluated to determine which courses may meet the time limits listed above.

Former Students

Any Denver campus graduate student who has not been enrolled in his or her admitted program of study for three consecutive semesters

(summers included) is considered a former student and must reapply for admission to the program by submitting part I of the application for graduate admission, in-state tuition classification form, along with the applicable fee. Readmitted students must conform to degree requirements in effect during the term in which they are readmitted. If the new requirements differ significantly from the former degree plan, a petition may be submitted requesting exceptions.

Graduation

Students must apply for graduation through UCD Access (student portal) when they register for their last semester. Contact the graduate advising office with questions at grad.advising@ucdenver.edu.

Grade Point Average Requirements

A minimum cumulative graduate business GPA of 3.0 must be achieved and maintained for courses taken toward a graduate business degree. All CU Denver graduate business courses, regardless if the coursework pertains to the current degree and including courses taken as a graduate non-degree seeking business student, are computed in the graduate business cumulative GPA. Transfer hours and grades from other institutions and/or from University of Colorado courses taken on the Boulder Campus, Colorado Springs Campus, or the Anschutz Medical Campus, are not computed in the business GPA. However, degree credit may be awarded for those transfer courses through a petition process. If the required cumulative GPA does not meet the minimum requirement of 3.0 or higher when degree course requirements have been met, the student will be placed on academic probation. Academic probation will only be offered at that time if the student can mathematically achieve the required 3.0 cumulative GPA by taking the additional 9 semester credits of coursework. If after that probation period, the student is still not at the required 3.0 GPA to graduate, the Business School cannot confer the degree.

Probation and Suspension

If after completing 9 semester hours a student's cumulative graduate business GPA falls below 3.0, the student will be placed on academic probation. If the student achieves that required cumulative GPA, they are cleared from probation and may continue their studies with us. Failure to achieve the required GPA within the program requirements may result in suspension for one year. If suspended, students may not attend any campus of the University of Colorado including continuing education/extended studies. Students on suspension may petition for readmission to the school after waiting a minimum of one year from the term in which they were suspended. Any suspended student readmitted to the school will be placed on continued probation status to monitor required progress. To be considered for readmission, a petition form plus a new graduate application part I and in-state tuition classification form must be submitted along with the appropriate fee. Generally, petitions are granted only on rare occasions. Re-admitted students must meet any new admission requirements that may be in place. Prior coursework may no longer be applicable if program requirements have changed. In addition, if a student cannot mathematically achieve the required 3.0 cumulative GPA with the remaining required courses, the petition to return will not be approved.

PASSING GRADES

Any grade below a C (2.0) is a failing grade for graduate students (C is passing; C-, D+, D, D- and F are failing). Graduate students must repeat a required course for which they have received a grade below a C. Both the original grade and the grade for the repeated course count in the computation of the business GPA. If a grade lower than a C is earned in an elective course, the student may repeat that course or select another

course. NOTE: C is a passing grade, while C-, D+, D, D- and F are failing grades.

REPEATING GRADUATE BUSINESS COURSES

A failed course (any grade below a C such as C-, D+, D, D- or F) must be repeated if it is a required course. Both the original and the repeated grade will remain on the student's transcript and both grades will be calculated into the students cumulative GPA. A course in which a grade of C or better is obtained may not be repeated. Graduate business courses repeated without approval may not be used in the graduate business GPA calculation.

Drop/Withdrawal

Classes dropped prior to census date will not appear on the transcript. Thereafter, to drop after census date, with a grade of W, a student must be earning a grade of C or better; otherwise, an F will appear on the transcript. Students will not be permitted to drop a course or withdraw from all courses after the 10th week of the regular semester or the 5th week of the 8-week sessions, unless circumstances outside the student's control are documented. The late request to drop or withdraw must be approved by the assistant dean and the course instructor(s). If a student requests to drop a course after the 10th week of the regular semester or the 5th week of the 8-week sessions solely due to a failing grade, the request will be denied. Requests to drop after the 10th week of the regular semester or the 5th week of the 8-week sessions must include a petition explaining the reason for the late drop.

Registration for Graduate Business Courses

Students admitted to graduate business degree programs have priority for graduate business course registration. Nondegree students and graduate students from other University of Colorado schools or colleges may be permitted to attend on a space-available basis by meeting the qualifications and submitting a nondegree application form. (See the college website for the form.) Some graduate-level (6000-level) courses may be offered simultaneously with undergraduate 4000-level courses. However, most 6000-level courses are reserved exclusively for graduate business students.

Business Administration Programs

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- Business Administration - Health Administration, MBA (p. 109)
- Business Administration, MBA (p. 110)
- Business Administration/Business, MBA/MS (p. 114)
- Business Administration/Medicine, MBA/MD (p. 114)
- Business Administration/Urban and Regional Planning, MBA/MURP (p. 114)
- Business Administration: One Year MBA (p. 114)
- Business Analytics, MS (p. 116)
- Business/Business, MS/MS (p. 116)
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- Finance and Risk Management, MS (p. 117)
- Finance/Economics, MS/MA (p. 118)
- Global Energy Management, MS (p. 118)
- Information Systems, MS (p. 119)
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- Marketing, MS (p. 123)
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Certificates

- Bioinnovation and Entrepreneurship Certificate (p. 126)
- Commodities Certificate (p. 126)
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- Graduate Certificate in Risk Management (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/business-school/business-administration/risk-management-insurance-certificate/>)
- Post-Graduate Certificates (p. 128)
- Sustainability Certificate (p. 128)

Accounting (ACCT)

ACCT 5939 - Internship (1-3 Credits)

Repeatable. Max hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

ACCT 6015 - Accounting for the Public Interest (3 Credits)

Applies accounting knowledge and concepts in a not-for-profit organization. Student volunteers help with functions or special projects and are supervised by both faculty members and personnel from the agency to which they are assigned Note: This class is rarely offered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4915. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6020 - Auditing Theory (3 Credits)

Focus on the professional responsibilities of CPAs, generally accepted auditing standards, and PCAOB auditing standards, with emphasis on the theory underlying the development of standards, objectives and procedures. Students cannot receive credit for both ACCT 4620 & ACCT 6020. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6030 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4620. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6031 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6024 - Advanced Financial Accounting (3 Credits)

Advanced financial accounting concepts and practices with an emphasis on accounting for equity investments, business combinations, and foreign currency. Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6025 - Auditing Practice (3 Credits)

Focus on the application of generally accepted auditing standards and PCAOB auditing standards to practice. Emphasis on procedures used by CPAs to gather and document audit evidence. Prereq: ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Students cannot receive credit for both ACCT 4625 and ACCT 6025.

Note: A grade of C or higher must be earned to receive credit for the CPA license. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6031 - Intermediate Financial Accounting I (3 Credits)

This course is designed to provide students with a comprehensive review and understanding of financial accounting principles, procedures, and financial statements as well as the measurement of income and assets. Skills related to problem solving, analytical thinking, and writing will also be developed. NOTE: Students who have taken ACCT 3220 (or equivalent) may not receive credit for ACCT 6031. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6032 - Intermediate Financial Accounting II (3 Credits)

Continuing the intensive coverage of financial accounting from ACCT 3220/ACCT 6031, this course covers concepts of financial accounting theory and generally accepted accounting principles not covered in 3220/6031. This typically includes detailed coverage of liabilities and equity, especially the topics of leases, deferred taxes, pensions and stock-options. Note: A grade of C or higher must be earned to receive credit for the CPA license. NOTE: Students who have taken ACCT 3230 (or equivalent) may not receive credit for ACCT 6032. Prereq: ACCT 6031 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6033 - Advanced Managerial Accounting (3 Credits)

Critical analysis of advanced topics in managerial accounting. Note: This class is rarely offered. Prereq: ACCT 3320. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6054 - Accounting Information Systems (3 Credits)

This course focuses on the analysis, design, implementation and control of accounting information systems. Emphasis is placed on primary business processes including documentation, modeling, retrieving information to support managerial decisions and controlling risks. Topics include transaction cycles, relational database modeling, data analytics and information systems risks and controls. Must earn a grade of C or better to qualify for graduation at the UG level and to receive credit for the CPA license. Prereq: ACCT 6031 or BUSN 6550 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4054 (previously ACCT 3054). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6070 - Intermediate Cost Accounting (3 Credits)

Cost accounting links financial and managerial accounting and emphasizes communication between accountants and managers. Topics include managerial uses of cost data for decision making, analysis of activities and cost behavior, the role of accounting in planning and control, and computer-assisted decision modelling Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: STUDENTS WHO HAVE TAKEN ACCT 3320 (or equivalent) MAY NOT TAKE THIS COURSE. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6080 - Accounting for Government and Nonprofit Organizations (3 Credits)

Nonprofit Organizations. Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3220 or BUSN 6550 or ACCT 6031 each with a C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 3220 or BUSN 6550 or ACCT 6031 each with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

ACCT 6140 - Fundamentals of Federal Income Tax (3 Credits)

Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including problems of tax planning and compliance. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4410 and 6140. Cross-listed with ACCT 4410. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

ACCT 6150 - Taxation of Business Entities (3 Credits)

A federal tax course stressing tax planning issues affecting corporations (both C corporations and S corporations) and partnerships. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4420 and ACCT 6150. Cross-listed with ACCT 4420. Prereq: ACCT 6140 or ACCT 4410 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6140 or ACCT 4410 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6220 - Seminar: Corporate Financial Strategy and Controls (3 Credits)

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller, including the timely and accurate preparation of the periodic financial statements, maintenance of an adequate records system, a comprehensive set of internal controls and budgets in order to manage and mitigate risk, how to enhance the accuracy of the company's reported financial results and ensure compliance with GAAP or IFRS. Topics also include techniques for cash forecasting, controlling and administering budgets, and developing effective long-range plans. Prereq: ACCT 6030 or ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6032 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6225 - Controllership: Managerial Strategy and Benefits Analy (3 Credits)

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller from a managerial and tax accounting perspective. Topics include establishing a cost accounting system, planning and control of manufacturing costs, business and strategic planning, mergers and acquisitions and a variety of tax related issues such as employment tax, employee vs. contractor, and choice of entity. The course will also include a discussion of benefits analysis, stock based compensation, ISO, NQSO and 83b elections. Prereq: ACCT 6220 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6220 with a grade of C (2.0) or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6230 - Advanced Topics in Mergers and Acquisitions (3 Credits)
Mergers and acquisitions are often a key component of organizational strategy for growth and competitive advantage; yet empirical studies indicate many of these transactions fail to meet their intended objectives. This course prepares accounting students as financial leaders to positively influence the achievement of planned synergies and acculturation for more successful M&A transactions. Integrating perspectives from accounting and organizational development, course topics include transaction valuation, contingent consideration, and asset impairment testing to organizational systems theory and post-transaction integration. Prereq: Grade of C (2.0) or higher in ACCT 6020 or ACCT 4620 and ACCT 6070. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6020 or ACCT 4620 and ACCT 6070 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6250 - Seminar: Financial Accounting (3 Credits)
Nature and origin of accounting theory and the development of postulates, principles and practices. Methodology appropriate to development and evaluation of accounting theory, with special emphasis on accepted research standards and procedures. Note: A grade of C or higher must be earned to receive credit for the CPA license. Co-req: ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: ACCT 6032 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Typically Offered: Fall, Spring.

ACCT 6260 - Seminar: Managerial Accounting (3 Credits)
Focuses on the conceptual foundations of managerial accounting. Behavioral and quantitative approaches regarding information for decision making, planning, control, performance evaluation and other issues are investigated. Note: A grade of C or higher must be earned to receive credit for the CPA license. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

ACCT 6280 - Accounting Ethics (3 Credits)
This course examines the ethical responsibilities of accounting professionals from a personal and professional perspective, including examples of ethical dilemmas accounting professionals confront. The course utilizes various authoritative codes of conduct, professional standards and applied ethical theory as ethical guidance for auditors, accountants, tax professionals, and accounting management. A variety of case studies are employed to give students practice in developing a decision making approach in dealing with difficult ethical scenarios. Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6282 - Capitalism, Accounting and Ethical Choices (3 Credits)
Examines the development of the U.S. economy from 1850 to today with emphasis on the ethics of accounting, capitalism, and government controls. Prereq: ACCT 2220 or BUSN 6550 (not strictly enforced). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6285 - Accounting and Finance for Sustainability (3 Credits)
Topics in accounting and finance related to business sustainability include the merits and challenges of a triple-bottom-line perspective, mandatory and voluntary reporting, environmental liability measurement and disclosure, emissions trading, green investments, shareholder activism, microfinance, and socially responsible investing. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6290 - Management Control Systems (3 Credits)
Focuses on the design and use of control systems which ensure that people in organizations behave consistently with the organizational goals. Controls for communication, motivation and performance evaluation (along with informational requirements) are stressed through analysis of cases and classroom discussion. Note: This class is rarely offered. Prereq: BUSN 6550 or equivalent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6320 - White Collar and Financial Crimes (3 Credits)
Course provides an opportunity to examine criminal activity perpetrated by individuals and/or organizations in a position of trust. White collar and financial crimes are qualitatively different from street crimes or violent crimes, yet they are highly destructive. Cover: types of crime, social impact, prevention, detection, regulating etc. Prereq: BUSN 6550 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6330 - Fraud Auditing (3 Credits)

This course provides an introduction to and guidance for creation of an effective fraud audit program in core business systems. The fraud audit is designed specifically to detect potential fraud and is vastly different than the traditional audit. Fraud auditing focuses on proven fraud methodology that allows auditors to discover fraud versus investigating it. The course: • Explains how to create a fraud audit program • Shows auditors how to locate fraud through the use of data mining • Focuses on proven methodology for detecting fraudulent transactions • Explores fraud discovery within specific corporate F&A functions, such as disbursement, procurement, payroll, revenue misstatement, inventory, journal entries, and management override. Prereq: ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6340 - Financial Statement Analysis (3 Credits)

Financial statements are used as an information source on which to base investment, lending potential or even employment. Designed to develop skills in using, understanding, analyzing, and interpreting financial statements and to make students aware of the value and limitations of financial statement information. Note: Should take in the third semester of the graduate program. Prereq: BUSN 6550 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall.

ACCT 6350 - Current Issues in Professional Accounting (3 Credits)

An in-depth analysis of current issues in the accounting profession, including ethics development, and validity of standards and regulations. Prereq: ACCT 3230, ACCT 4620, ACCT 6020 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall.

ACCT 6360 - Fraud Examination (3 Credits)

This course examines the theories and methods of the full spectrum of fraud examination including prevention, detection, investigation, and adjudication. In this course, students will explore the significant differences between fraud examination and auditing, going beyond detection into the investigative and adjudication process. Prereq: ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6370 - International Accounting (3 Credits)

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context, international auditing practices and procedures, international tax implications and the implications of operating within the regulations of the Foreign Corrupt Practices Act, the European Union, North American Free Trade Agreement and General Agreement on Tariffs and Trade. Prereq: BUSN 6550 or equivalent. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. IFRS's are reviewed and compared with the requirements of US GAAP. Cross-listed with INTB 6370 and ACCT 4370. Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

ACCT 6380 - Forensic Accounting (3 Credits)

An examination of investigative auditing, fraud auditing, litigation support, and economic quantification of damages. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6400 - Taxation of C Corporations and Shareholders (3 Credits)

This course is a study of federal income tax problems facing corporations and corporate shareholders. The course addresses introductory corporate tax issues found in Subchapter C of the Internal Revenue Code, including defining a "corporation" for federal income tax purposes; tax consequences associated with the formation of a corporation; taxation of corporate operations (including an analysis of the differences that exist between earnings and profits, dividend distributions and taxable income); corporate redemption transactions; partial liquidations; complete liquidations; and the acquisition, sale and disposition of corporate entities in transactions governed by Sections 336(e) and 338 of the Internal Revenue Code. Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

ACCT 6410 - Advanced Tax for Individuals (3 Credits)

This course is an advanced federal income tax course stressing the use of the Internal Revenue Code, Treasury regulations, case law, and administrative guidance to resolve federal income tax issues affecting individuals. Topics include items of gross income inclusion, exclusions, deductions, items of non-recognition, characterization of income, and tax rates. Prereq: Grade of C or higher in ACCT 6140 or ACCT 4410. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C or higher in ACCT 6140 or ACCT 4410. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

Typically Offered: Spring.

ACCT 6442 - Accounting: Professional Research and Communications (3 Credits)

This course provides students with a structured approach to researching and communicating practice-oriented financial accounting, auditing, and tax-related issues. After completing this course, students should be able to effectively: (1) Communicate (both oral and written) solutions to practice-oriented financial accounting, auditing, and tax-related issues. (2) Navigate through U.S. and international accounting, auditing, and tax authorities. (3) Conduct systematic research for all types of accounting-related problems then reach and communicate efficient conclusions using a variety of techniques. Prereq: ACCT 6030 or ACCT 6032 or ACCT 3230 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4442. Max hours:

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6032 or ACCT 3230 each with a grade of C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6450 - Tax Research (3 Credits)

This course provides a study of various methodologies used in tax research and tax planning and requires students to present their results through various forms of business communication. In particular, this course explores techniques (with an emphasis on electronic/on-line techniques) for locating and researching judicial cases, statutory materials and legislative histories, and administrative materials promulgated by the Internal Revenue Service applicable to tax-related issues and problems. Students must present their tax research results for various client-based hypothetical factual patterns in written formats, including memoranda and client letters, and through individual oral and group presentations. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

ACCT 6470 - Internal Auditing (3 Credits)

Intro course for business students and CIA candidates. Topics include: IA fundamentals; IA standards; internal controls; managing the IA department; IA working papers, procedures and evidences; fraud detection and prevention; ethics; evaluation of the IA function, and Sarbanes-Oxley Act of 2002. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6480 - Partnership Taxation (3 Credits)

This course focuses on fundamental tax issues relating to partnerships and partners arising from the formation, operation, and liquidation of partnerships. Course work includes an examination of pertinent federal income tax returns of a partnership. Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

ACCT 6490 - Experiential Learning (3 Credits)

Designed to provide practical knowledge on developing a professional practice in accounting or financial management. Topics: Marketing, operating a professional practice. Lectures, guest speakers (if you are interested in being a guest lecturer for the class contact the instructor), and student projects. Prereq: ACCT 3220 or permission of instructor. Cross-listed with ACCT 4490. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6510 - Advanced Accounting Information Systems (3 Credits)

The course is designed to develop knowledge and skills used to understand and evaluate corporating accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Prereq: ACCT 6054 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6054 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall.

ACCT 6520 - Issues in Oil and Gas Accounting (3 Credits)

The Oil and Gas Accounting course is a course designed to give students an overview of the oil and gas industry and the particular accounting issues this industry faces. The focus is on the oil and gas industry but many of the issues discussed are appropriate and applicable to all energy-related entities. This is a valuable learning experience for those interested in acquiring an understanding of the accounting issues for energy management firms in preparation for entry into public accounting. The course enjoys support from the energy industry in the form of guest speakers and project ideas. Prereq: BUSN 6550 or ACCT 3220 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4520. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 or ACCT 3220 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Spring.

ACCT 6620 - Seminar: Auditing and Other Assurance Services (3 Credits)

A graduate seminar course providing in-depth exposure to specialized topics in auditing and other assurance services, with an emphasis on recent developments in the profession. Includes coverage of generally accepted auditing standards and PCAOB standards. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or 6031 and 6020 all with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6800 - Special Topics (3 Credits)

Research methods and results, special topics and professional developments in accounting. Consult the current 'Schedule Planner' for semester offerings as new special topics courses are frequently added. Prereq: Varies according to topics and instructor requirements. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6840 - Independent Study (1-8 Credits)

Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6900 - Professional Certification in Accounting (3 Credits)

This course will prepare students for the Uniform Certified Public Accountant Examination, including the Auditing and Attestation (AUD), Business Environment and Concepts (BEC), Financial Accounting and Reporting (FAR), and Regulation (REG) sections. Topical coverage will include a balance of most-tested topics, difficult topics, and exposure to topics not addressed in required accounting degree courses. Note: there will be a materials fee of \$1,100 for this course. All materials will continue to be available until successful passage of the CPA Exam. Note: Undergraduate Accounting students typically perform better in this class when taking it during the final semester prior to graduation. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6939 - Internship/Cooperative Education (3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 15 semester hours for MS students and 21 hours for MBA students and a cumulative 3.2 GPA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

ACCT 6950 - Master's Thesis (1-8 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Additional Information: Report as Full Time.

Business (BUSN)

BUSN 5939 - Internship (1-3 Credits)

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6520 - Leading Individuals and Teams (3 Credits)

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6521 - Leading Individuals and Teams (3 Credits)

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

BUSN 6530 - Data Analytics for Managers (3 Credits)

Provides an overview of techniques for data analysis, including multiple regression, sampling theory and applications of probabilistic inference from sample data. The emphasis is upon the applications of these techniques to management problems. Students are required to analyze data sets, present their analyses in written or oral form and defend their conclusions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6540 - Legal and Ethical Environment of Business (3 Credits)

Students develop a working knowledge of legal and ethical parameters for business decision making. The course addresses the legal system and mechanisms for resolving disputes. Topics include constitutional law, torts, product liability, contracts, property law, consumer protection, intellectual property, business entities and employment law. It stresses the influence of legal issues on organizational decision making. Note: Students can substitute ENTP 6822 but credit cannot be received for both. Health Administration students must take BUSN 6541. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6541 - Legal and Ethical Environment of Business (Health Section) (3 Credits)

Students develop a working knowledge of legal and ethical parameters for business decision making. Addresses the legal system and mechanisms for resolving disputes. Topics include business entities, torts, contracts, employment relationships, litigation and alternative dispute resolution. It stresses the influence of legal issues on organization and decision making. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Spring.

BUSN 6550 - Analyzing and Interpreting Accounting Information (3 Credits)

Emphasizes the use of accounting statements and data in making business decisions. External financial accounting information and concepts are used for investment and credit decisions. Internal managerial accounting information and concepts are used for product costing, cost analysis and management control. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6560 - Marketing Dynamics in the 21st Century (3 Credits)

This course focuses on the art, science, and practice of managing dynamic market environments and making decisions about alternative marketing strategies. Students use analytical frameworks to inform decision-making about the many specific aspects of marketing: e.g., value proposition, target markets, positioning, products, channels of distribution, pricing, communication, and service. Participants learn how to integrate these elements into a Marketing Plan. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6561 - Marketing Dynamics in the 21st Century (Health Section) (3 Credits)

Focuses on the formulation and implementation of a marketing plan in the context of the firm's strengths, overall strategy and competitive environment. Emphasis is on understanding the marketing environment and on decision making skills regarding market selection, pricing, promotion, product configuration and management of distribution channels. Restrictions: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to HLAD and MBAH majors within the Business School.

BUSN 6610 - Information Systems Strategy (3 Credits)

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Note: Students cannot receive credit if they have taken BUSN 6810 or ISMG 6180. Cross-listed with ISMG 6180. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring, Summer.

BUSN 6620 - Applied Economics for Managers (3 Credits)

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firms interactions with its competitive market environment. Students will learn basic aspects of federal macroeconomic policy designed to achieve stable prices and economic growth. Also, they will learn to understand the measurement of output (GDP), employment and prices; the conduct of monetary and fiscal policy; and the balance of trade. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6621 - Applied Economics for Managers (Health Section) (3 Credits)

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firm's interactions with its competitive market environment. Students should understand basic aspects of federal macroeconomics policy designed to achieve stable prices and economic growth. Also, they should understand basic aspects of government regulation of business. The emphasis is on healthcare issues and is intended for healthcare students. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

BUSN 6630 - Management of Operations (3 Credits)

This course is concerned with the production and delivery of goods and services. It provides an overview of a variety of contemporary Operation Management topics using current techniques and modeling to solve and understand key issues. Basic Excel skills are required. The use of model-assisted decision making is emphasized. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6640 - Financial Management (3 Credits)

This course is concerned with the business firm's decisions to make investments and to finance its operations. Students learn to use the tools and theories underlying business valuation, cost of capital, capital budgeting and capital structure. Students will learn to evaluate a firm's financial position through the examination of its financial statements and to prepare pro forma statements for the firm. Prereq: BUSN 6550 with a grade of C or better. Coreq: BUSN 6620 or BUSN 6621. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 with a grade of C or better Coreq: BUSN 6620 or BUSN 6621 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6710 - Strategic Management (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for an enterprise. Students gain an understanding of strategy formulation and implementation within the context of the global environment. Cross-listed with MGMT 6620. Note: Students may not receive credit for both BUSN 6710 and MGMT 6620. Note: This course is intended as a final semester Capstone course.

Coreq: BUSN 6560 or 6561, BUSN 6630 or BUSN 6631; and BUSN 6640.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 or 6561, BUSN 6630 or BUSN 6631; and BUSN 6640

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

Typically Offered: Fall, Spring, Summer.

BUSN 6711 - Strategic Management (Health Section) (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for a health delivery organization. Students gain an understanding of strategy formulation and implementation within the context of the managed care environment. Emphasis is on the integration of knowledge acquired in the previous functional area courses. Note: This course is intended as a final semester course. Required of Health Administration majors. Coreq: BUSN 6560 or BUSN 6561, and BUSN 6640. Restrictions: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Corequisites: BUSN 6560 or BUSN 6561, and BUSN 6640 Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Spring.

BUSN 6800 - Topics In Business (3 Credits)

Current topics in business are occasionally offered. Prerequisites vary depending on the material covered. Consult the current 'schedule planner' for specific offerings and prerequisites. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6807 - Analyzing Emerging Opps & Planning During Uncertain Time (3 Credits)

To develop strategic thinking and practical planning skills. Prepare students for the dynamic and uncertain business environment today. More specifically, we explore how to think innovatively and spot trends, develop formal business plans around emerging opportunities, address uncertain and volatile situations using scenarios. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6811 - IT and New Business Paradigms (3 Credits)

Introduces graduate students to the relationship between information technology and the other functional areas of the business. During the course, students have an opportunity to listen and learn from guest speakers who have been involved with either guiding or interpreting the impact of information technology among functional areas of existing or new business. Through the use of current readings, guest lectures and case analysis, students examine various models of IT and new business paradigms to determine the decisions and success criteria for integrating IT in ongoing business. A unique feature of the class will be the opportunity for students to present proposals and projects to be critiqued by individuals with IT or business experience. Those individuals provide feedback and perspectives regarding potential IT or new business paradigm activities. Prereq: Permission of instructor. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6812 - Business Intelligence and Analytics (3 Credits)

This course covers business intelligence, analytics, and artificial intelligence technologies and is organized around three types of analytics that are enabled by those technologies: descriptive, predictive, and prescriptive analytics. The theme of artificial intelligence runs throughout the course from business intelligence, to machine learning and deep learning as applied in areas such as computer vision, autonomous vehicles, and robots. The topics will be discussed using concepts and theory, business cases and applications, and hands-on analysis or model building using datasets available in the public domain, with the hands-on analysis and model building being the focus of the course. Students will use a leading BI software and a cloud computing platform to perform analysis and build machine learning models. Note: The recommended prerequisite for this course is ISMG 6080. If you are familiar with SQL and have worked with databases in the past, you satisfy the prerequisite requirement for this course. Cross-listed with BUSN 6812/ISMG 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6840 - Independent Study (1-3 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6860 - Finance in the Sports Entertainment Industries (3 Credits)

This course explores the problems and solutions of financing in sports and entertainment business. It focuses on stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues and managing disparate revenue streams. The course utilizes speakers, articles, problem sets and cases. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Commodities (CMDT)

CMDT 6490 - Commodity and Equity Trading (3 Credits)

This is a co-listed class with the J.P. Morgan Center for Commodities and the Finance Department. This course focuses on how securities and futures contracts are designed and traded including trading exchange operations, regulation, trading mechanisms and processes. Students will learn the theory and practice of securities and futures contract trading with a focus on hands-on trading experience using industry software (CQG and Bloomberg) as well as use of data sources (Morningstar). In this course, we will review the origins of liquidity, volatility, price efficiency, and trading profits. Next we will cover a host of topics concerning equity and commodity trade execution strategies, such as why and how investors trade, what and when investors profit from investing and speculating, the key principles of high-frequency trading and investor's overconfidence, why market institutions are organized as they are, and the role of public policy in the markets. Cross-listed with CMDT 4490, FNCE 4490 and FNCE 6490. Max hours: 3 Credits.

Grading Basis: Letter Grade

CMDT 6582 - Commodity Supply Chain Management (3 Credits)

This course introduces the design, analysis, management, and control of supply chains as applied to commodities. The course covers integration of processes and systems, relationship management of upstream and downstream supply chain players, and commodity-specific supply chain strategies. Cross-listed with CMDT 4582. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School.

CMDT 6682 - Commodity Valuation and Investment (3 Credits)

This course is a practical introduction to commodity markets. Students will learn how commodities are managed in the global markets from a hedgers, speculators and arbitrageurs point of view. Understanding the relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to futures and options markets analysis deploying strategies professional traders use in diverse market conditions. Students will work with the various trading software throughout the course and gain proficiency in real-world trading. Note: Students cannot receive credit for both CMDT 6482 or FNCE 6482. Cross-listed with CMDT 4682. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School.

CMDT 6782 - Commodity Data Analysis (3 Credits)

This course is an applied introduction to commodity data analysis. Students will learn how to analyze commodity prices using quantitative techniques. Relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to forecasting techniques and be able to develop and evaluate various forecasting models. Students will work with the open source R software environment throughout the course and gain proficiency. Cross-listed with CMDT 4782. Max hours: 3 Credits.

Grading Basis: Letter Grade

CMDT 6802 - Foundations of Commodities (3 Credits)

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with CMDT 4802 and FNCE 4802/6802. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

CMDT 6840 - Commodity Independent Study (1-3 Credits)

Independent study in the field of commodities. Topic of study varies according to project. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Finance (FNCE)

FNCE 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

FNCE 6290 - Quantitative Methods for Finance (3 Credits)

This course provides a statistical foundation for subsequent courses in the Master of Science in Finance program. Major topics include descriptive statistics, probability theory, statistical estimation and inference and regression analysis. The emphasis is on finance applications, such as risk measurement, for portfolio diversification and the "market model". In addition, students develop competence in the use of statistical software packages. This course provides preparation for the statistical portions of the Certified Financial Analyst professional examinations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6300 - Macroeconomics and Financial Markets (3 Credits)

Covers the U.S. financial system in the global economy. Specific topics include financial institutions, money creation and monetary policy; the Federal Reserve System and its operation; the international financial system; interest rate determination, yield curves, and their relation to fiscal policy; the role of households and business in financial markets; stock markets; and money markets and instruments. (Required for the M.S. in Finance degree.) Coreq: BUSN 6620. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6620 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6310 - Financial Decisions and Policies (3 Credits)

Emphasizes investment and financing decisions, and the analysis of the financial condition of the firm. Specific topics include capital budgeting, cost of capital, financing mix and strategy, firm valuation and management of working capital. Instruction is by the case method. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6330 - Investment Management Analysis (3 Credits)

In this course students will learn investment theories and how to apply them to portfolio management. Topics covered include asset allocation, security markets, the analysis and use of investment information, risk analysis and security valuation. This course is required for the M.S. in Finance degree. Prereq: BUSN 6640 and BUSN 6620 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 and BUSN 6620 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6340 - Business Firm Valuation (3 Credits)

In this class, students will learn two valuation techniques, fundamental valuation and relative valuation, to value a business. These techniques are useful in such situations as valuing firms for mergers and acquisitions and valuing stocks for investment purposes. Some of the topics included are valuation of start-up firms, valuation of privately held firms, and valuation of firms with negative earnings. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6350 - Financial Innovations (3 Credits)

Innovations include zero coupon bonds, inflation indexed bonds, structured notes, asset-backed securities, collateralized mortgage obligations, and interest rate swaps. The student learns about the markets and pricing of these securities, and how they affect interest rate risk. The course prepares the student for careers in corporate treasury management, structured financing, swaps trading, and mortgage backed securities design. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6360 - Management of Financial Institutions (3 Credits)

Overview of financial institutions and their risk management/financial performance management issues such as: management of operational, credit, liquidity, interest-rate, capital, off-balance sheet, and environmental risks; Uniform Bank Performance Report (UBPR) risk/performance analysis, hedging techniques and regulations/performance/risk. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6365 - Banking Principles and Practices (3-9 Credits)

Covers money and capital markets, commercial lending, asset and liability management, loan portfolio management and bank management. This class is only available to Colorado Graduate School of Banking students. Similar material is covered in FNCE 6300 and FNCE 6360. Therefore Business School students must enroll in those courses.

Banking students cannot receive credit for FNCE 6300 or FNCE 6360. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only
Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6370 - International Financial Management (3 Credits)

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources and policies of firms doing business internationally. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with INTB 6372. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6372 - Time-Series Forecasting (3 Credits)

Students learn forecasting methodologies such as ARIMA, regression, smoothing, and time-series decomposition applicable to marketing, finance, accounting, human resources management, and supply chain and production management decision-making. This course focuses on practical applications of forecasting techniques, choosing and comparing appropriate methods and applying the results to workplace situations. If you do not meet the prerequisites you may contact the instructor for permission to register. Prereq: BANA 6610 or BUSN 6530 or FNCE 6290 or (BUSN 6530 taken at CU Denver or consent of instructor - no CBK waivers of BUSN 6530 will be considered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BANA 6610 or BUSN 6530 or FNCE 6290 with a grade of C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6380 - Futures and Options (3 Credits)

This covers both speculation and hedging using futures and options. The student learns about futures pricing, how futures are related to the underlying commodities and how to design hedges. Stock index futures and interest rates futures get particular attention. The course covers the theory and application of option pricing, focusing on the binomial and Black-Scholes models. Popular options trading strategies are discussed. This course is useful for those who wish to trade or become portfolio managers, as well as those who plan on corporate treasury management. Prereq: BUSN 6640 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6382 - Survey of Financial Derivatives (3 Credits)

This course introduces forward contracts, used in price risk management for millennia. We cover the properties of forward/futures contracts, structure of the markets and strategic implications for speculation and hedging. We price forwards from spot price, and introduce convenience yield. Options used for insurance purpose (think of your car insurance as a put option) is a more expensive way to manage risk; we cover option strategies and basic pricing. The course concludes with swaps, credit derivatives and structured products. Asset classes covered are equity, fixed income, currency, agriculture, energy (oil/gas and electricity) and metal/mining. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6410 - Real Options and Decisions Under Uncertainty (3 Credits)

This is an applied course in making investment decisions under uncertainty and flexibility. Traditional NPV analysis using tools such as Discounted Cash Flow (DCF) model assumes that once an investment decision has been made, managers have no control over the outcome and they remain passive throughout the life of the project. Most corporate projects, however, have a great deal of flexibility in terms of their execution. This course will help students develop skills to identify and analyze real options so that they may approach real world corporate investment decisions in a strategic manner. This course may be used to fulfill the requirement for an options course in the MS (Finance) program. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6411 - International Corporate Governance (3 Credits)

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, and how and why these roles, goals, and mechanisms vary across nations. The topics covered in the course include managerial compensation, board of director structure and ethics, shareholder activism, and how governance structures differ across countries. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with FNCE 4411 and INTB 6411. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6420 - Mergers and Acquisitions (3 Credits)

Examines the processes and decisions by which mergers, takeovers and other corporate restructuring occur, the transactions occur. Analyzes merger and acquisition decisions as part of strategic decision making, and how firms are valued in mergers. Discusses the market for corporate control and the public policy implications of mergers and corporate governance. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6450 - Short-Term Financial Management (3 Credits)

This course is a survey of methods for managing short term assets and liabilities. Specific topics include the analysis of the firm's liquidity and cash flow, banking relationships; collection and disbursement systems; management of short term investment and financing; management of receivables, payables and inventory; and short term forecasting. This course is affiliated with the Association of Financial Professionals, allowing students earning at least a 'B' to sit for the Certified Treasury Professional (CTP-A) exam. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6460 - Emerging Market Finance (3 Credits)

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with INTB 6460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

FNCE 6470 - Behavioral Finance (3 Credits)

Over the past several decades, the field of finance has developed a successful paradigm based on the notions that investors and managers were generally rational and the prices of securities were generally "efficient." In recent years, however, anecdotal evidence as well as theoretical and empirical research has shown this paradigm to be insufficient to describe various features of actual financial markets. In this course we examine how the insights of behavioral finance complements the traditional paradigm and sheds light on the behavior of asset prices, corporate finance, and various Wall Street institutions and practices. Prereq: BUSN 6640. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640

FNCE 6480 - Financial Modeling (3 Credits)

Develops and implements financial models for purposes of financial planning and decision making. This course is intended to allow the student to increase her or his knowledge and skill in the development of various types of computer-based financial planning models. The students are exposed to the uses of a variety of computer software packages that can be used for modeling financial planning problems. Prereq: BUSN 6640, knowledge of computer and spreadsheet software. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6490 - Commodity and Equity Trading (3 Credits)

This is a co-listed class with the J.P. Morgan Center for Commodities and the Finance Department. This course focuses on how securities and futures contracts are designed and traded including trading exchange operations, regulation, trading mechanisms and processes. Students will learn the theory and practice of securities and futures contract trading with a focus on hands-on trading experience using industry software (CQG and Bloomberg) as well use of data sources (Morningstar). In this course, we will review the origins of liquidity, volatility, price efficiency, and trading profits. Next we will cover a host of topics concerning equity and commodity trade execution strategies, such as why and how investors trade, what and when investors profit from investing and speculating, the key principles of high-frequency trading and investor's overconfidence, why market institutions are organized as they are, and the role of public policy in the markets. Cross-listed with CMDT 4490, CMDT 6490 and FNCE 4490. Max hours: 3 Credits.

Grading Basis: Letter Grade

FNCE 6800 - Special Topics (3 Credits)

Experimental course offered irregularly for the purpose of presenting new subject matter in finance. Prerequisites vary depending upon topics covered. (Consult the 'Schedule Planner' for semester offerings.) Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6802 - Foundations of Commodities (3 Credits)

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with FNCE 4802 and CMDT 4802/6802. Max hours: 3 Credits.

Grading Basis: Letter Grade

FNCE 6840 - Independent Study: FNCE (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6995 - Travel Study (3 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 8990 - Dissertation Development (1-15 Credits)

Supports development of a dissertation in conjunction with a student's advisor. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Additional Information: Report as Full Time.

Economics (ECON)

ECON 5030 - Data Analysis with SAS (3 Credits)

Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications(ECON 3811) or a similar course is strongly recommended as preparation for this course. Cross-listed with ECON 4030. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall, Spring.

ECON 5050 - Special Economic Problems (1-8 Credits)

Provides students the opportunity to critically evaluate some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4050. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5073 - Microeconomic Theory (3 Credits)

Fundamental features of partial equilibrium theory of the firm, consumer and market. General equilibrium and welfare economic topics are examined. Features of the models that have empirical applications are accented. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5083 - Macroeconomic Theory (3 Credits)

Examines the major macroeconomic models within a common framework. Differences in the foundations, structure, and policy implications of the competing models are analyzed. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5090 - History of Economic Thought (3 Credits)

Traces the development of economic thought from ancient times to the 20th century. Considers the context in which these ideas were developed and their relationship to modern economic thought and contemporary economic problems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Microeconomics (ECON 2022) and Macroeconomics (ECON 2012) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4090. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5150 - Economic Forecasting (3 Credits)

Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications (ECON 3811) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4150. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5410 - International Trade (3 Credits)

Trade theory identifies who wins and loses from trade and why there are usually overall gains. Explores issues in immigration, globalization, income inequality, tariffs, dumping, the WTO, the environment, wages and growth strategies among others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4410. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5530 - Economics of Natural Resources (3 Credits)

Examines economic models of renewable resource management and models of exhaustible resource depletion. Analyzes decisions made by private firms and governments affecting the methods and rate of resource development. Examines the effects of resource development on economic growth and environmental quality and the effects of economic development on resource scarcity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4530. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5540 - Environmental Economics (3 Credits)

Economic approach to environmental problems: relationship between ownership structures, externalities and environmental damage; poverty, population pressure, and environmental degradation; valuation of environmental amenities; sustainability of economic activity; cost-benefit analysis applied to the environment; evaluation of alternative instruments for environmental control. Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4540. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5660 - Health Economics (3 Credits)

Introduces students to analytical skills and economic methods, and demonstrates how these methods can be applied to issues in health policy and management. Topics include: demand for health and medical care; health care costs, health reform, medical technology; market for health insurance; physicians, hospitals, and managed care; pharmaceuticals; regulations in the U.S. health care sector; demand for addictive substances; infant and maternal health; international comparisons of health care systems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5740 - Industrial Organization (3 Credits)

Examines the determinants of, and linkages between, market structure, firm conduct, and industrial performance. Topics include: determinants of the market size; impact of different market structures on prices and outputs; strategic behavior of firms to prevent entry or induce exit of rival firms; collusion; price discrimination; advertising; competition, monopoly, and innovation; implications for economic efficiency and public policy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4740. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5800 - Special Topics (1-3 Credits)

Current economics topics to be determined by the instructor.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5803 - Mathematical Economics (3 Credits)

Introduces the use of mathematics in advanced micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations. Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll ECON 5803. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll in ECON 5803.

ECON 5813 - Econometrics I (3 Credits)

Theory and application of statistical techniques used to analyze economic problems. Topics include simple and multiple regression models, simultaneous equation models, and the problems encountered in their application. Students formulate models, obtain data, estimate models, interpret results and, forecast. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5823 - Econometrics II (3 Credits)

Second course in the econometrics sequence, covering intermediate topics in cross-section and time series analysis. Topics include limited dependent variables, autoregressive and distributed lag models, longitudinal data analysis and unit roots, co-integration and other time-series topics. Prereq: ECON 5813 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5813 with a B- or higher Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECON 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5950 - Master's Thesis (1-4 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

ECON 6010 - Advanced Microeconomic Theory (3 Credits)

Recent and contemporary literature on fundamentals of economic theory. Consideration of value theory with particular emphasis on methodology, theory of demand, theory of the firm, and theory of distribution. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 6020 - Advanced Macroeconomic Theory (3 Credits)

Considers general equilibrium and aggregative analysis in economic theory, with particular emphasis given to the theory of employment, consumption and investment. Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing

ECON 6053 - Seminar In Applied Economics (1.5 Credits)

Familiarizes students with applied research in economics. Students read, discuss, and critique articles in economic journals. Emphasis is placed on research design and methods employed in these articles to prepare students for development of their own research projects in subsequent courses. Topics vary with instructor, and may include international economics, labor economics, monetary theory, public or finance and development economics. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6054 - Seminar In Applied Economics II (1.5 Credits)

Familiarizes students with state-of-the-art applied economic research. Students read, discuss, and critique articles published in economic journals. Note: Topics vary with the instructor. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Term offered: spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6060 - Special Topics (1-3 Credits)

Special topics in advanced microeconomics. Consideration of value theory based upon methodology, theory of demand, and theory of distribution. Restriction: Restricted to students with Graduate standing. Introduction to Mathematical Economics (ECON 3801) or similar coursework is strongly recommended as preparation for this course. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ECON 6073 - Research Seminar (3 Credits)

Focuses on training students to do rigorous research in economics. Topics include the analysis of large data sets, further development of econometric skills, and writing a research paper. Note: Students attend lectures and also meet regularly with the instructor in the process of doing a sophisticated research project. ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing

ECON 6210 - Public Finance (3 Credits)

Advanced economic theory applied to the problems of public and private sector decision making. Applied topics in taxation, education, voting theory, welfare economics, externalities and public goods. Prereq: ECON 5073. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6410 - International Trade (3 Credits)

Contemporary and classical literature on theories of international trade. Topics include the determination of the pattern and terms of trade, the relationship between growth and trade, and commercial policy. Prereq: ECON 5073. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6420 - International Finance (3 Credits)

Topics in international finance, including exchange rate determination, the adjustment process, international financial markets and the international monetary system. Prereq: ECON 5073. Max hours: 3 Credits. Grading Basis: Letter Grade

ECON 6610 - Labor Economics (3 Credits)

Advanced study of the labor market, including: history, nature, and function of labor organizations; the process of wage determination; and the formation of public policy. Prereq: ECON 5073 and 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6666 - The Economics of Health Behaviors (3 Credits)

This course teaches an economic approach to studying health behaviors and the policies that affect them. Special attention will be paid to analyzing the effects of excise taxes and to understanding the quasi experimental approach to doing applied research in economics. Prereq: ECON 5073 and ECON 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6770 - Economic Growth and Development (3 Credits)

Considers the role of planning in economic development, with particular reference to investigation of planning problems, especially in less developed countries. Prereq: ECON 5073 and 5803. Max hours: 3 Credits. Grading Basis: Letter Grade

ECON 6801 - Advanced Mathematical Economics (3 Credits)

Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory. Prereq: ECON 5803 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6810 - Econometrics and Forecasting (3 Credits)

Covers advanced topics in cross-sectional and time-series analysis. Emphasizes important theoretical and empirical issues encountered in applied work in economics and business. Topics include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students learn to execute estimation and forecasting projects soundly. Prereq: ECON 5813 and 5823 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 7073 - Advanced Microeconomic Theory II (3 Credits)

This is a second-semester Ph.D. level course in microeconomics. The first semester course discussed consumer and producer theory; this course will discuss game theory, market equilibrium, and information economics. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 7661 - Health Economics I (3 Credits)

This is the first course in the Ph.D field sequence for Health Economics. The goal of this course is to familiarize you with the basic theory and empirical findings in the part of health economics which focuses on the market for medical care and the policy that surrounds it. Pre-req or co-req ECON 5823. Students must enroll in both courses concurrently or have completed ECON 5823 with a B- or better. Restricted to students with graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 7662 - Health Economics II (3 Credits)

This course teaches an economic approach to studying the various policies that affect these risky health behaviors. The extensive economic literature on the causes and consequences of risky health behaviors will be studied. Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 8990 - Doctoral Dissertation (1-10 Credits)

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must be in the Health Economics PhD program and have permission from the instructor to be eligible for this course. Term offered: fall, spring. Repeatable. Max hours: 50 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 50.

Additional Information: Report as Full Time.

Global Energy Management (GEMM)

GEMM 6000 - 21st Century Global Energy Issues and Realities (3 Credits)

Introduction to the global energy industry's past, present and future. Current and historical issues in regions such as: Atlantic Basin, former Soviet Union, east of Suez, North and South America will be covered. World production centers and markets are discussed to include relevant energy security, scenario planning, risk management and regulation, deregulation, and environmental concerns. Note: Students will learn the geographic distribution of energy resources worldwide including governmental systems. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6100 - Global Energy Economics (3 Credits)

Course includes energy geo-economics with an introduction to managerial tools of the trade. Topics will include world energy markets- demand and supply; refining and marketing, energy forecasts, oil and gas transportation, and National Oil Companies vs. International Oil Companies. An introduction to environmental economics will also help students connect the energy industry to sustainable work practices. In addition students will learn the geographic distribution of energy resources worldwide along with the political and government systems associated with those resources. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6200 - Environmental, Regulatory, Legal & Political Environment in the Energy Industry (3 Credits)

Exploration of current political situations regarding the energy industry, its environmental impact in the short and long term. Topics include climate change, pollution, solid wastes and conversions to natural resources. Students will become familiar with national and international energy laws and regulations, financial arrangements, confidentiality, and bidding agreements. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6210 - Energy and the Law: Property and Contracts (3 Credits)

The elective will focus on the process of managing the use and development of land resources in a sustainable way. Topics such as; public controls, powers used for land regulation, and an intro to real estate will be covered to enhance students understanding of land management and its application to the energy industry. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6220 - Interacting With Foreign Governments And State Enterprises (3 Credits)

Globalization of many energy companies, dwindling U.S. energy sources, and growing overseas energy demand have increased the need for energy professionals to gain expertise in doing business with foreign governments and state enterprises, which play a much greater role in the ownership and operation of energy extraction and energy delivery in virtually all countries beyond the United States and Canada. This course reviews negotiation strategies in the context of uncertain contract enforcement, volatility and uncertainty of prices and restrictions, and highly contentious political contexts. It also reviews the approaches for interacting effectively with state enterprises that are often undercapitalized and inefficient, and examines how valuation of energy assets can take into account political risk, and requirements to provide infrastructure and social services. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6230 - Political Risk Management for Global Energy Environmen (3 Credits)

The course examines public influence on energy business activities. Students will explore the economics of political action and methods for evaluating how stakeholder groups interact to influence political outcomes. They will use these tools to develop strategies for stakeholder engagement and to manage business risks. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEMM 6300 - Technical Aspects of Energy Science (3 Credits)

This course will familiarize students with the newest renewable and alternative energy sources. The course does not focus on hydrocarbon sources but examines challenges and opportunities that exist for the establishment of the new energy sources to become viable in the industry. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6400 - Leadership and Decision Making in the Global Energy Environment (3 Credits)

Students will examine leadership from an energy executive perspective.

Topics include: how execs lead, change, innovation, interacting with top management teams, the board, leadership issues involved with governance of the firm, strategies for enhancing executive influence and ethics and responsibilities associated with exec. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6410 - People Management in the Global Energy Environment (3 Credits)

Explains that people are energy's most important asset. Students will learn the latest research in human resource theories, study models, and learn how to develop organizational effectiveness from the firm's human capital. Concepts on: effective teamwork, attracting and retaining talent and using HR processes such as performance management and development to drive engagement will be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6430 - Organizational Behavior in the Energy Industry (3 Credits)

Students will learn how to lead and manage human assets inside energy industries. Students will be exposed to fundamental principles of human behavior and increase their competence of working in diverse settings. Proper management can lead to a sustainable competitive advantage, because of management of employees and developing them into enthusiasts of your firm. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6450 - Strategic Management of the Energy Industry (3 Credits)

The course focuses on how to improve an organization's competitiveness in a changing global environment. Emphasis on sustainable strategies, students develop skills to formulate, implement and evaluate organizational strategies in the rapidly changing environment. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6460 - Integrated Information Management for Energy Firms (3 Credits)

This course covers issues associated with developing an integrated information managing strategy to identify major information categories used with an energy firm. It covers relationships to business processes to guide applications development and facilitate the integration and sharing of data. Using case studies from energy firms operational, administrative and strategic systems will be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6470 - Energy Marketing and Communications (3 Credits)

This course covers the challenges faced by energy industries in developing branding, and developing new markets. Marketing both products and the company to its stakeholders, in the face of competitive pressures, students learn practical marketing tools and how they can be used to effect corporate strategy. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6500 - Energy Accounting in the Global Markets (3 Credits)

The course builds a basic understanding of how to convey to decision makers, in and out of the firm, information about its resources. Emphasis on; analysis of income statements, balance sheet, statement and cash flows (historical financial accounting information) with specific coverage of cost-volume-profit, variance, forecasting, joint interest accounting and measurement of divisional performance. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6600 - Introduction To Financial Management In The Energy Industry (3 Credits)

Introduction to fundamental principal of asset valuation and financing in competitive global markets. Providing the tools necessary to analyze day-to-day financial issues in the energy industry (time value of money, valuation of income streams, risk weighted investment returns.) Topics such as: risk management, arbitrage, hedging and foreign exchange will be covered. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6610 - Advanced Financial Management in the Energy Industry (3 Credits)

This course is focused on understanding the costs and benefits of various forms of capital. By examining internal and external managers, students will be able to assess alternative capital sources to achieve their strategic objectives. The course will introduce effective investor communication techniques. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6620 - Energy Asset & Production Management for the Energy Industry (3 Credits)

The course covers management of an organization's energy resources and facilities as well as broader coverage of project management. Portfolio strategy, planning, scope, time, cost, quality and organizational effectiveness will be addressed. Also when budget, material, vendor relations or other factors disrupt a project, students will be prepared on how to react. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6630 - Commercialization Management of Renewable Energies (3 Credits)

This course will focus on the business aspects running a renewable energy entity either as a separate company or sector within an established company. Students taking this course have completed a previous course on the basic science of renewable energy. This course is intended to focus on leadership issues and decision making regarding renewable energy. As a significant part of the course, students will learn how to review information and data supplied to them by engineers, accountants, finance, marketing, scientists, and other stakeholders within and outside their company including federal, state, and local governments and regulatory agencies to make sound business decisions. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6690 - Special Topics (1-3 Credits)

This elective course is intended to be a variable-credit course specially designed to provide national and international learning opportunities. The course will offer concentrated problem-solving experiences within the energy industry through travel to industry-significant cities and regions, while meeting and visiting with people working and dealing with issues in the industry. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEMM 6840 - Independent Study (1-3 Credits)

Allow students to gain additional experience in a particular realm of energy business that interest them and suit their ultimate career goals. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Health Administration (HLTH)

HLTH 5939 - Internship (1-3 Credits)

Grading Basis: Letter Grade

HLTH 6010 - Health Care Systems (3 Credits)

Introduces the structure and function of the medical care delivery system. Includes basic concepts and measures of health, disease, quality, values, needs and utilization; issues in health care manpower, institutions and system organization; general issues in policy, reimbursement and regulation; broad community, and organizational considerations in medical care organizations. The student is introduced to the principles of epidemiology and environmental health and demonstrates the application of epidemiology concepts to planning for the healthcare service needs of a population. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Fall.

HLTH 6070 - International Health Policy and Management (3 Credits)

A framework for understanding national health reform policy and management issues in the U.S. and other nations, including industrialized, developing, and transforming nations. This course combines classroom and on-line teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Fall.

HLTH 6071 - Introduction To Health Information Technology (3 Credits)

Examines what needs transforming in healthcare to improve value, safety, and appropriateness of care, and what the role of IT is in that transformation. IT also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested, and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with ISMG 6071. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD, MBAH and INFS majors within the Business School.

Typically Offered: Spring.

HLTH 6072 - Management of Healthcare Information Technology (3 Credits)

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems, and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with ISMG 6072. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD, MBAH and INFS majors within the Business School.

Typically Offered: Fall.

HLTH 6075 - International Health Travel Study (3 Credits)

Experiential course, which is designed to open students up to innovative health delivery practices in an international location. Students learn how health issues such as reproductive health, infectious diseases, mental health, health and economy, and chronic diseases are handled in community and public health settings. Class trips are usually 14-18 days to an Asian country during the month of January. Prereq: HLTH 6010 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6730 - Healthcare Operations Management (3 Credits)

Students in this course will obtain a comprehensive and practical examination of operations management with an emphasis on application to health care organizations. Students will use mathematical and basic spreadsheet skills to critically assess patient flows, volume projection, and supply chain management to improve the efficiency of service delivery in health care organizations. Detailed content on reducing cycle times (e.g., patient wait times), measuring productivity, streamlining process flows, tracking outcomes, staffing, and performance metrics will be presented in the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

HLTH 6740 - Profiles in Health Care (3 Credits)

This colloquium provides a rare opportunity for students to interact with top CEOs from health care organizations around the country. Students learn about HMOs, hospitals, medical group practices, consulting, managing careers, how to get jobs, and how to be successful in a job. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Spring.

HLTH 6770 - Healthcare Quality and Outcomes (3 Credits)

Studies the identification, measurement and improvement of healthcare quality. Covers, historic and contemporary views of quality, improvement theories and methods, organizational quality systems, leadership, patient safety, cost and quality, quality measurement and reporting, clinical outcomes, care redesign and medical terminology. Restriction: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6800 - Special Topics (3 Credits)

Offered irregularly. Current interests in the health management field.

Topics recently offered include: international health, ethics, general systems theory, and key issues for health systems. Consult the current 'Schedule Planner' for semester offerings. Prerequisites vary according to topics and instructor requirements. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6840 - Independent Study: HLTH (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6911 - Health Field Studies (3 Credits)

The objective of this course is to expose students to health care organizations with which they are not familiar. Each student is assigned to a health care organization and given a specific problem or project to complete. Prereq: HLTH 6010 or permission of instructor. After registration, please contact Errol.Biggs@ucdenver.edu for further instructions. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Information Systems (ISMG)

ISMG 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Repeatable. Max hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

ISMG 6020 - Programming Fundamentals with Python (3 Credits)

This course is designed to provide a thorough introduction to Python and fundamental programming concepts like data structures, networked application program interfaces, files and databases. Principles of object-oriented programming and secure programming practices are demonstrated using programming constructs taken from the business domain. Students are required to design and create their own applications for data retrieval, processing, and visualization. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6028 - Travel Study Topics (3 Credits)

Join your classmates in an international travel study course to understand the business operations of another culture. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6040 - Business Process Management (3 Credits)

Designing effective information systems for business requires an awareness of the organization(s) business processes and how to manage and streamline them. The objectives of the course are for students to understand the importance of business processes; the main types of business processes; and the evolution of business process management; business process outsourcing; business process re-engineering; business process redesign; technology enabled business processes; and automated workflow. An important activity is graphically mapping business processes, which are transformed into an application or set of applications. The organization needs to manage the electronic workflow to monitor that the work gets done and allow changes to the workflow. Case studies of organizations are studied for most topics to enhance understanding. The group projects let students apply their knowledge of the course to a specific organization. By the end of this course students should have an appreciation of the important process-centric issues in business systems design. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6060 - Analysis, Modeling and Design (3 Credits)

Provides an understanding and application of systems analysis and design processes. Students are exposed to system development life cycle (SDLC), structured systems analysis and design methods, object-oriented analysis and design methods, prototyping and commercial off-the-shelf package software approaches, and joint and rapid application development. Emphasizes the skills required for system analysts such as analytical, interpersonal, technical, fact-finding, and project management skills. Topics include data, process and object modeling, input-output and user interface design, and systems implementation and support. To provide an opportunity to develop these skills, an information system project is completed by a group of students. Students use a Case tool for their group project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6071 - Introduction to Health Information Technology (3 Credits)

Examines what needs transforming in healthcare to improve value, safety and appropriateness of care, and what the role of IT is in that transformation. It also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with HLTH 6071. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6072 - Fundamentals of Health Information Technology Management (3 Credits)

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with HLTH 6072. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6080 - Database Management Systems (3 Credits)

The success of today's business often hinges on the ability to utilize critical information to make the right decisions quickly and efficiently. Transforming mountains of data into critical information to improve decision making is a skill every business decision maker must possess. This focus course covers the database design topics with a focus on enabling business decision making. Detailed topics include collecting, capturing, querying and manipulating data (using SQL and QBE) for simple to medium complex business applications. Commercial database products are utilized to demonstrate the design of database applications in management, marketing, finance, accounting, and other business areas. Students will be able to design and implement simple to medium complex database applications after successful completion of this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6120 - Network Design and Analysis (3 Credits)

Communication, knowledge sharing, and information acquisition within and between businesses are critical for long term strategic business success. Technological advancements are radically changing the way business communication and knowledge sharing are performed. This course will briefly examine the traditional concepts of local and wide area networks for reference purposes, but then will focus on how newer technologies are changing business practices. Traditional local and wide area network concepts that will be covered in this course include WiFi wide area networks, wireless local area networks, cellular networks, and additional supporting services. Newer technologies that will be covered include social computing, Internet of Things, and artificial Intelligence. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6180 - Information Systems Strategy (3 Credits)

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Cross-listed with BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring, Summer.

ISMG 6200 - Global Information Systems (3 Credits)

Will focus on managing information technology globally and the new organizational and information technology designs that firms are establishing to meet the ever-growing global requirements. The course will cover such issues as how information is used and how information technology is deployed by multinationals in different countries, the state of information technology and telecommunication industries in countries around the world, how global firms gain strategic benefits from information technology, and how firms manage and use global virtual teams. Prereq: ISMG 6040 or 6120 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6220 - Business Intelligence Systems and Analytics (3 Credits)

This course covers business intelligence, analytics, and artificial intelligence technologies and is organized around three types of analytics that are enabled by those technologies: descriptive, predictive, and prescriptive analytics. The theme of artificial intelligence runs throughout the course from business intelligence, to machine learning and deep learning as applied in areas such as computer vision, autonomous vehicles, and robots. The topics will be discussed using concepts and theory, business cases and applications, and hands-on analysis or model building using datasets available in the public domain, with the hands-on analysis and model building being the focus of the course. Students will use a leading BI software and a cloud computing platform to perform analysis and build machine learning models. Note: The recommended prerequisite for this course is ISMG 6080. If you are familiar with SQL and have worked with databases in the past, you satisfy the prerequisite requirement for this course. Cross-listed with BUSN 6812/ISMG 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring, Summer.

ISMG 6240 - Website Development Practice and Technologies (3 Credits)

Presents a broad coverage of design principles and techniques to develop effective web sites. The course emphasizes: (1) understanding the principles of web page and web site design and the process of publishing web pages, (2) developing client-side scripts for use in web sites, (3) using server-side programs or scripts to develop dynamic web sites using databases, and (4) understanding technologies for managing large web sites including XML schemas, content management systems and web services. If you have relevant experience in database and programming please contact the instructor for permission to waive the prerequisite of ISMG 6020. Prereq: ISMG 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Typically Offered: Fall.

ISMG 6280 - Service Oriented Architecture (3 Credits)

Explores "Service Oriented Architecture" (SOA), which refers to a design pattern made up of components and interconnections that stress interoperability and location transparency. Covers the latest heterogeneous models for carrying out large scale distributed computing using Web services. The fundamentals of defining, designing, building, testing and rolling-out a SOA system are explored using tools from major Web service vendors. Also, looks at the impact of SOA on software quality, efficiency, performance and flexibility. Prereq: ISMG 6020.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6320 - Innovative Health Information Technologies (3 Credits)

Learn how innovative health info technologies shape and redefine healthcare by enhancing medical care through scope and scale effects, providing tech efficiencies in delivery of care, utilizing advance tools for patient Ed and self-care, network-integrated decision support, e-business models & opportunities for e-health. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6340 - Cloud Computing Concepts, Tools, and Security (3 Credits)

This course provides an introduction to cloud computing concepts, capabilities, and scenarios where cloud computing technology can be leveraged. Students will learn the basic building blocks of cloud computing, investigate the various types and models of cloud computing, and identify how businesses can implement these technologies. This class uses hands-on labs to give students real-world practice on how to configure and secure a cloud computing environment. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6420 - Global Enterprise Systems (3 Credits)

Examines the evolution of global enterprise systems - from internally focused enterprise resource planning (ERP) client or server systems to externally focused eBusiness. Studies the types of issues managers need to consider in implementing cross-functional integrated enterprise systems. Examines the general nature of global enterprise computing, re-engineering principles and the technical foundations of client or server systems and enterprise information architectures. Students learn about the global enterprise systems marketplace. Topics include the tools and methodology, modules, processes and industry initiatives. Finally, the course looks into the future and predicts enterprise system trends. The objective of the course is to make students aware of the potential and limitations of global enterprise systems. The objective will be reached through case studies, lectures, guest speakers and a group project.

Coreq: ISMG 6180 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6430 - Information Systems Security and Privacy (3 Credits)

Designed to develop knowledge and skills for security of information and information systems within organizations. Focuses on concepts and methods associated with planning, designing, implementing, managing, and auditing security at all levels and on all systems platforms, including enterprise systems. This course presents techniques for assessing risk associated with accidental and intentional breaches of security as well as disaster recovery planning. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course or during the same term as you take this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6450 - IT Project Management (3 Credits)

Focuses on how firms successfully manage the adoption of IT. Projects and program management principles are the primary focus of this course. Topics covered include approaches to prioritizing projects, estimating cost and time-to-market, build vs. buy decision, planning, monitoring and controlling implementation, measurement, total cost of ownership, effective management of both behavioral and technical aspects of the project and change management. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6460 - Emerging Technologies (3 Credits)

Provides an introduction to the expansive array of information technologies that form the infrastructure of a modern business enterprise. Emphasis is placed on learning conceptual technological foundations and understanding the business value of the various technologies. The purpose of the course is to develop the student's ability to discuss recent technological advancements with other IT professionals and management. Technology assessment is emphasized. Prereq: ISMG 6180 or BUSN 6610 (6810). Restriction: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Cross-listed with BUSN 6800. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6180 or BUSN 6610 Restriction: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Typically Offered: Fall.

ISMG 6470 - Text Data Analytics (3 Credits)

This course covers algorithms and tools that are required to perform quantitative analyses of unstructured text data. Concepts and algorithms that will be covered include Zipf's Law, Power Law Distribution, Pattern Discovery, Inverse Document Frequency, measurements of Document Clustering and Similarity and so on. R will be introduced as a practice tool to practice quantitative analysis of text data. After the completion of this course, students will be able to uncover and visualize underlying themes and concepts which might be latent in large text documents. Note: The recommended prerequisite for this course is ISMG 6020. If you are familiar with programming and have worked with programming languages in the past, you satisfy the prerequisite requirement for this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6480 - Data Warehouse and Administration (3 Credits)

Management of large, complex data warehouses and operational databases involves technical skills and background needed by information systems professionals as well as tactical and strategic issues faced by information technology managers. This course provides conceptual knowledge, practical skills, and policy background for prospective information systems professionals and information technology managers. The course covers business aspects, conceptual background, and product material about management of data warehouses and operational databases. Assignments and projects involve Oracle skills for database administration and tactical or strategic issues faced by information technology management. Prereq: ISMG 6080. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6080 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6510 - Accounting and Information Systems Processes and Controls (3 Credits)

Designed to develop knowledge and skills used to understand and evaluate corporate accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach issued to present concepts and techniques for evaluating the adequacy of system processes and controls. Cross-listed with ACCT 6510, 4780 and ISMG 4780. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6800 - Special Topics (3 Credits)

A variety of advanced topics are offered in this course. Past topics include the human-computer interface, software engineering, artificial intelligence, graphical user interface, project management and electronic commerce. Consult the current 'Schedule Planner' for semester offerings. Note: Seldom offered. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6810 - Business Intelligence in Healthcare (3 Credits)

Provides students with an overview of how business intelligence is used in the healthcare industry. Students study the evolution of IT in healthcare including digitization of electronic health records and systems integration. Next the course looks at healthcare transformation and the evolution of business intelligence in general. Using case studies and hands on exercises, students learn about different aspects of business intelligence in various subsets of the healthcare industry. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6820 - Business Intelligence and Financial Modeling (3 Credits)

This course will introduce students to the application of business intelligence in a corporate finance setting. Financial data intelligence is essential for effective decision making throughout the firm, in finance directly and in other functions supported by the finance department. Strategy setting, budgeting, and new product development are just a few decision areas where finance personnel play an active role. In this course, we learn how to apply business intelligence software tools to enable finance personnel to access and analyze corporate data in support of critical decision making across the enterprise. Students will also analyze data through the use of financial models built in Microsoft Excel. The development of complex financial models will provide students with valuable hands-on experience with a software tool used widely incorporate finance departments. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Cross-listed with ISMG 4750 and FNCE 4750. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6830 - IT Governance and Service Management (3 Credits)

Deals with interrelated decisions on clarifying the business role of IT, defining integration and standardization requirements for the IT architecture, shared and enabling services for the IT infrastructure and business need for SaaS, and governance of cloud computing, IT outsourcing, and other IT services. Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6840 - Independent Study: ISMG (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6850 - Securing the Enterprise (3 Credits)

This course provides the knowledge required to analyze the current enterprise environment in order to prepare a risk mitigation for security vulnerabilities encountered. Topics include principles and concepts; threats, vulnerabilities, risks, attacks and controls; risk process and management; and enterprise security policies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6855 - Protecting the Enterprise (3 Credits)

This course examines methods and techniques used to secure an enterprise's environment. Topics include threat prioritization and mitigation; social engineering and security policies; encryption and cryptography; virtual private networks, wireless and mobile device management; antivirus, intrusion detection and protection systems; and firewalls and proxy servers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6860 - Ethical Hacking Concepts and Methodologies (3 Credits)

From a technical perspective, organizations need to know how hackers work so that they can build their security around it and take preemptive measures against future attacks. The goal of the ethical hacking is to understand current exploits, and assess weaknesses and vulnerabilities of various organizational information systems by attacking them within legal limits. This course is designed to provide students an insight of current hacking tools and techniques used by hackers and security professionals to break into any computer systems. Throughout the course, students will engage in offensive and defensive hands-on exercises stressing ethical hacking and penetration testing that will be conducted in a vendor-neutral virtual environment. Topics include security threats and attack vectors, footprinting and reconnaissance, network scanning and enumeration techniques, vulnerability assessment, system hacking, malware threat analysis, social engineering, attack and defense strategies in emerging technologies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6865 - Digital Forensic Analysis (3 Credits)

This is an introductory course in collecting, examining, and preserving evidence involving digital devices. This course examines the issues, tools, and control techniques needed to successfully investigate illegal or malicious activities facilitated through the use of information technology. The tools of collecting, examining, and evaluating data in an effort to establish intent, culpability, motive, means, methods, and loss resulting from these crimes will be examined. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6870 - Securing Information Assets (3 Credits)

This course concentrates on the identification of information assets and the techniques used to protect them from unauthorized access. Topics include laptops, desktop and server vulnerabilities; network vulnerabilities; extranet and intranet management; incident response and management; web site and web services management; virtualization in the data center; and cloud computing security. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6875 - Protecting Information Assets (3 Credits)

This course illustrates how information assets can be subjected to internal and external attacks and presents techniques used to secure them from unauthorized access. Topics include sub-networking for guest and vendor access; managing mixed operating system environments; data at rest and data in-transit; database inference; network management systems and security; information assurance tools and techniques.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6880 - Intrusion Detection and Incident Response (3 Credits)

A topic of increasing importance and interest in the world of information systems and business is malicious intruder detection and the response procedures required to secure business systems once an intrusion has occurred. It is critical that the organizations dependent on information technology have incident handling procedures when computer intrusions occur. By having proper incident response procedures, organizations can quickly recover from intrusions and where feasible bring perpetrators to justice. This course will provide the student the opportunity to learn about the elements that comprise Intrusion Detection and Incident Response. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6885 - Ethics: A Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, MGMT 6420, ISMG 4785. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

ISMG 6890 - IT Risk Management (3 Credits)

This course provides an overview of IT risk management practices. Students will learn the elements of risk management and the data necessary for performing an effective risk assessment. Various risk management models will be introduced to demonstrate the methods that can be implemented to achieve Confidentiality, Integrity, and Availability of information systems. This class uses hands-on labs to give students real-world practice utilizing Security Information and Event Management (SIEM) software to gain an understanding of how to detect and respond to a cyber threat. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6895 - Digital Forensic Analysis II (3 Credits)

This course examines advanced digital forensic analysis topics, tools, techniques, and control mechanisms. Advanced topics include operating system artifacts, anti-forensics, mobile and embedded devices, and volatile memory forensics. Students will gain experience with state-of-the-art forensics tools and techniques needed to successfully investigate illegal activities perpetuated through the use of information technology. Prereq: ISMG 6860 and ISMG 6865. Restriction: Restricted to Graduate Business School students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6860 and ISMG 6865 Restriction: Restricted to Graduate Business School students

ISMG 6910 - Design Science Practicum (3 Credits)

This is designed to be one of the final courses in the MS Information Systems degree. "Design Thinking" with user-centered perspectives will serve as a guiding principle to challenge assumptions and refine business problems to perform the final project. The instructor will provide students with tools and methods to identify, define and solve problems. Active discussion and creative presentation are core activities of this capstone course. Students will integrate what they have learned into a final project that can be either real-world problem designed in collaboration with an organization or a research paper on an emerging topic in the field. The final project will have multiple deliverables including a paper and a professional presentation to stakeholders who are directly related with the business problems defined in the project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6950 - Master's Thesis (1-8 Credits)

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Additional Information: Report as Full Time.

ISMG 7001 - AI-Based Decision Making (3 Credits)

Introduces decision making concepts. It covers a range of approaches, techniques and tools for decision aiding and describes how they can be used to support decision processes. The topics include human decision making, decision support systems, knowledge-based systems, and AI methods that support decision making, like machine learning, Bayesian networks and association rules. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7002 - Computer Security (3 Credits)

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric cryptosystems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more.

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7002. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7200 - Advances In Management Information Systems (3 Credits)

Provides an introduction to research methodologies engaged in Management Information System Research, including measurement, sampling, survey research, experiments, quasi-experiments and some qualitative research methods. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

Typically Offered: Fall.

ISMG 7208 - Philosophy of Information Systems Research (3 Credits)

This course surveys the philosophical foundations that underlie the development of IS theories, research methods and measurements. The focus is placed on intensive and rigorous readings and critiques of key literature at the intersection of philosophy, sociology, history and information systems. Upon the completion of this course, students are expected to have enhanced capabilities to discern the ontological and epistemological boundaries of various IS theories and research methods so that they can carry out IS research with informed knowledge. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7210 - Topics In Analytical Research In Management Information Systems (3 Credits)

Provides a detailed coverage of selected analytical research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7211 - Topics In Behavioral and Organizational Research In Management Information Systems (3 Credits)

Provides a detailed coverage of selected behavioral and organizational research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7211. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7212 - Strategic and Organizational Research in IS (3 Credits)

This course examines concepts in information technology with an emphasis on organizations, organizational strategy, and competitive advantage. Using a seminar method, students will be introduced to foundational concepts and current knowledge in the IT-based research areas of information and organizational economics, boundaries and markets, firm performance, organizational capabilities, innovation, organizational design and management mechanisms, and the challenges to achieving competitive advantage over competitors. Through completion of this course, students should acquire the ability to evaluate organization-focused IT research and identify valued questions that can be examined in future research. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7214 - Mixed Methods Research (3 Credits)

This course focuses on techniques for designing and executing mixed methods research in information systems area. Students will review the philosophical foundations of both qualitative and quantitative foundation. Basic practice, effective use and avoidance of pitfalls in mixed methods approach will be discussed. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7220 - Research methods: Design and Analysis (3 Credits)

Research methods: Design and Analysis. Topics include: research design, approaches to gathering data; sampling methods; linear multivariate analysis methods emphasizing structural equations models; and a brief survey of other methods such as cluster analysis, multidimensional scaling, methods such as neural nets, CART and/or genetic algorithms. While much of the material is of general interest, the course emphasizes methods and situations to prepare students in the CS/IS Ph.D. program for research in their field(s). The course includes student projects involving the analysis of data using appropriate software, whose results are presented to the class. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with DSCI 6220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7551. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7552. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews, and presentations, students carry out a semester long team project within the scope of one of the above topics. Prereqs: CSCI 3453 or CSCI 5573. Cross-listed with CSCI 7574. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 7582. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7654 - Algorithms For Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: Fixed-Interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing, broadcasting and conflict resolution. Prereq: CSCI 5451. Cross-listed with CSCI 7654. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate Standing. Cross-listed with CSCI 7765. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7799 - Topics in Network Computing (3 Credits)

Studies the active research topics in network based computing such as Cluster, Grid computing, P2P Computing, Pervasive Computing. Workflow system and Cloud Computing. Students will study key papers in the literature, and submit a research term project. Prereq: Graduate Standing. Cross-listed with CSCI 7799. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7800 - Special Topics (3 Credits)

A variety of advanced topics are offered at the Ph.D. level in this course. Consult the current 'Schedule Planner' for semester offering. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Typically Offered: Spring.

ISMG 7840 - Independent Study: Pre-Dissertation Research (1-9 Credits)

Conduct pre-dissertation research under the supervision of a faculty member. Prereq: BUSN 6530. Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 8990 - Dissertation Development (1-15 Credits)

Supports development of a dissertation in conjunction with a student's advisor. Prereq: Completion of first year and second year papers (ISMG 7840). Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Additional Information: Report as Full Time.

International Business (INTB)

INTB 5800 - Special Topics in International Business (3 Credits)

Current topics in international business are occasionally offered. Consult 'Schedule Planner' for specific course offerings or contact an advisor for information. Prereq: Topics vary depending on the topic and the instructor requirements. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

INTB 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and a 3.5 grade-point average. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

INTB 6000 - Introduction to International Business (3 Credits)

This course examines the international business environment, its impact on business operations across borders, and the international dimensions of key business and managerial functions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6020 - Cross-Cultural Management (3 Credits)

Focuses on the management of diverse socio-cultural and political norms and values in the global marketplace. The goal of this course is to develop skills in managing impacts of such values and norms on the effectiveness of international business operations and managerial activities. Prereq: INTB 6000 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6022 - International Business Negotiations (3 Credits)

Examines the international dimensions of business negotiations. It addresses the impact of the cultural, legal, political environments in the negotiation process, and examines similarities and differences in negotiation styles and approaches across borders. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6024 - International Trade Finance and Management (3 Credits)

Provides an overview of international trade finance and trade management. It examines the roles played by various parties involved in international trade, addresses key methods of international payment and related financing, and provides practical experiences on how to manage the import and export trade management process. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6026 - Marketing Challenges at the Global Frontier (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with MKTG 6020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD
Typically Offered: Fall, Spring.

INTB 6028 - Global Study Topics (3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, ENTP 6028, and INTB 4028. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6030 - 11-Month MBA International Business Study Abroad (3 Credits)

The 11-Month MBA International Business Study Abroad is an experiential learning course conducted abroad. Available for 11-Month MBA students only.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

INTB 6040 - Managing Global Talent (3 Credits)

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6520 or BUSN 6521 or MGMT 6380 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with MGMT 6040. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6520 or BUSN 6521 or MGMT 6380 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

INTB 6060 - The Legal Aspects of International Business (3 Credits)

Analyzes the legal aspects of international business transactions and considers risk-reducing mechanisms such as letters of credit and arbitration. The course examines NAFTA, the European union, and other international trading structures and rules, giving the background for export or import activities. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6082 - Marketing in Emerging Markets (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect the marketing plan. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6560. Note: Students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with MKTG 6080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6094 - Marketing Issues in the Chinese Environment (3 Credits)

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with MKTG 6094. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6200 - International Business Policy (3 Credits)

The objective of this course is to develop competence relevant to strategy formulation and implementation in a multi-national enterprise, and in an international context. Provides theoretical knowledge, skills, and sensitivities that help deal effectively with the strategic and managerial problems of managing in a global environment. Prereq: INTB 6000 or ENTP 6826. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: INTB 6000 or ENTP 6826. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6270 - Intercultural Communications (3 Credits)

This course examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. This course may count towards the MS in International Business program and Global Cross-Cultural Studies specialization. Restriction: Restricted to NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with COMM 4270 and COMM 5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6370 - International Accounting (3 Credits)

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context. IFRS's are reviewed and compared with the requirements of US GAAP. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. Prereq: BUSN 6550 or ACCT 6031. Cross-listed with ACCT 6370 and ACCT 4370. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

INTB 6372 - International Financial Management (3 Credits)

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources, and policies of firms doing business internationally. Meets concurrently with FNCE 6370. Prereq: BUSN 6640. Cross-listed with FNCE 6370. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6411 - International Corporate Governance (3 Credits)

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, and how and why these roles, goals, and mechanisms vary across nations. The topics covered in the course include managerial compensation, board of director structure and ethics, shareholder activism, and how governance structures differ across countries. (This course qualifies as an international elective for the MS in International Business program). Prereq: BUSN 6640 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with FNCE 6411 and FNCE 4411. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6460 - Emerging Market Finance (3 Credits)

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with FNCE 6460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

INTB 6500 - International Business Consulting (3 Credits)

This action-learning course provides students the opportunity to work with and consult for a company at the senior executive level (e.g., CEO, Business Unit heads) in order to add value to the firm's international business. Students will apply international business principles and practices to address a strategic, functional, operational, or geographic opportunity facing a sponsoring organization. In addition, students will gain "on the job learning" of key protocols in an international business consulting context. Note: Because the topics change each term, student may take this course twice. Work with an advisor to make sure there is room in your degree plan before enrolling in the second course.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

INTB 6600 - Blockchain and Emerging Technologies Impact Globalization (3 Credits)

Examines Blockchain and digital technologies powering globalization--how they are driving instant access to information, boosting transaction speed, and broadening the scope and reach of business across borders. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

INTB 6730 - Supply Chain Analytics (3 Credits)

Introduces the design, analysis, management, and control of supply chains. Because of continuing advances in globalization, sustainability, and information technology, course emphasis will include integration of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Cross-listed with BANA 6730. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6750 - Research Methods in International Business (3 Credits)

Focuses on three major issues: (1) research design from an international management perspective (e.g., qualitative, quantitative and ethnographic); (2) topical issues (e.g., culture, international negotiations, mergers and alliances); (3) trends in international business research (e.g., cross-national project teams, emerging theoretical perspectives). This course qualifies as an international elective for the MS in International Business program. Note: Available to students as Independent Study only. Prereq: INTB 6000 and BUSN 6530 or equivalent. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6800 - Special Topics in International Business (3 Credits)

Current topics in international business are occasionally offered. This includes international field study courses. Consult the 'Schedule Planner' for specific course offerings or contact an advisor for information. (This course qualifies as an international elective for the MS in International Business program.) Prereq: Topics vary depending on topic and instructor requirements. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6840 - Independent Study (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. (This course qualifies as an international elective for the MS in International Business program.) Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6870 - Global Climate Change (3 Credits)

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6950 - Master's Thesis (1-8 Credits)

Prereq: INTB 6750. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Additional Information: Report as Full Time.

Management (MGMT)

MGMT 5800 - Special Topics in Management (3 Credits)

A number of different topics in management are offered under this course number. Consult the Schedule Planner for current course offerings.

Prerequisites vary depending on the topic and instructor requirements.

Cross-listed with MGMT 4950. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MGMT 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

MGMT 6020 - Leadership in Difficult Times (3 Credits)

The test of a leader often is their ability to lead their organizations through difficult times and crises. Such situations could be downsizing, product defects, ethical violations, a terrorist attack or a natural disaster. Successful management of these situations can strengthen and renew the organization. Inability to manage these situations can tarnish the organization's reputation and threaten its survival. This course examines leadership under stress and provides frameworks for categorizing and analyzing these difficult situations. The course also addresses strategies that leaders can use to enable their organizations to manage, recover and learn from these difficult experiences. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6028 - Travel Study Topics (3 Credits)

Join your classmates in an international travel study course to understand the business operations of another culture. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6040 - Managing Global Talent (3 Credits)

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program). Restriction: Restricted to graduate Business majors and NDGR majors with a sub-plan of NBA or NBD, within the Business School. Cross-listed with INTB 6040. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6320 - Leading Organizational Change (3 Credits)

The course focuses on the tasks and skills of a leader that are important for leading organizational change. Topics include: diagnosing problems, creating urgency, building the change team, creating a vision, implementing change strategies, sustaining the momentum and making change stick. These tasks and skills are studied in various change contexts. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6360 - Designing Effective Organizations (3 Credits)

Examines how to design organizations within the context of environmental, technological, and task constraints. The emphasis is on learning how to recognize and correct structural problems through the analysis of existing organizations in which the students are involved. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6380 - Managing People for Competitive Advantage (3 Credits)

Focuses on the management of human resources in organizations. Oriented toward the practical application of human resources management principles in areas such as: equal employment opportunity, affirmative action, human resources planning, recruitment, staffing, benefits and compensation, labor relations, training, career management, performance management, and occupational health and safety.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6420 - Ethics: A Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, ISMG 6885, and ISMG 4785. Restriction: Restricted to graduate business school students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

MGMT 6610 - Business Strategy Lab (3 Credits)

Gain strategy experience collaborating with and consulting to Senior Executives of a client company. This is a hands on, project-based course. Students will analyze a strategic initiative as defined by and with the organization's leadership and provide their client with research, insights and actionable strategic ideas. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6620 - Strategic Management (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for an enterprise. Students gain an understanding of strategy formulation and implementation within the context of the global environment. Cross-listed with BUSN 6710. Restriction: Restricted to graduate majors of ORMG within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors of ORMG within the Business School.

MGMT 6710 - HR: Talent MGT (3 Credits)

This course explores the many aspects of Talent Management including strategic talent planning, recruiting and acquisition, employee development, performance management, engagement and retention, succession planning, and compensation, with a strong focus on recruitment and acquisition. The course demonstrates how each aspect of Talent Management is interdependent. Prereq: MGMT 6380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6720 - Human Resources Management: Training (3 Credits)

Covers training methods, theories, research findings. Students design and deliver their own training program, including collecting and analyzing metrics to gauge training success. Co-req: MGMT 6380. Cross-listed with MGMT 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6730 - Human Resources Management: Performance Management (3 Credits)

Focuses on the design and implementation of human resources management systems to assess and enhance employee performance. Areas of study include performance measurement, rater training, goal setting and feedback. Prereq: MGMT 6380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6740 - Human Resources Management: Compensation (3 Credits)

Develop and administer pay systems considering economic and social pressures, traditional approaches and strategic choices in managing compensation. Current theory research and practice. Students design a compensation strategy and a system that translates that strategy into reality. Prereq: MGMT 6380 and BUSN 6530. Cross-listed with MGMT 4450. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6530 and MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6750 - HRM: Investing in People: HR Analytics (3 Credits)

Managing talent-organization and deployment-and connections between talent and strategy in organizations. Rooted in a systematic, logical approach that challenges traditional ideas. Stresses the logical connections between progressive HR practices and firm performance and the use of data to demonstrate financial impact of the connections. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6760 - Employee Benefits and Workforce Risk Management (3 Credits)

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with MGMT 4460 and RISK 4409/6409. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6781 - Human Resources Management: Career and employment coaching (3 Credits)

Focuses on enhanced approaches to discovering employment opportunities and providing career coaching, with an emphasis on unemployed veterans. Topics include discovering the unique capabilities a job-seeking veteran possesses, addressing the barriers to employment he or she may face, and methods the job seeker can use to educate prospective employers about the contributions to organizational success he or she can make. Cross-listed with MGMT 4481. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6782 - Human Resources Management: Connecting talent with business needs (3 Credits)

Focuses on methods for connecting businesses and public-sector organizations with job seekers who possess the capabilities that will fuel profitable growth and mission success. Topics include networking to establish relationships with hiring decisions makers, exploration conversations to identify an organization's success factors, and identifying job seekers (with a special emphasis on unemployed veterans) with the requisite skills, knowledge, traits, and aptitudes. Cross-listed with MGMT 4482. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6800 - Special Topics in Management (3 Credits)

Current topics in management will be occasionally offered. Consult the 'Schedule Planner' for specific offerings or contact an advisor for information. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6801 - Career Strategies (3 Credits)

The downsizing, restructuring, and re-engineering so prevalent in U.S. industries and companies have strongly affected the job and career market. Every individual must sharpen his/her competencies and skills in order to compete effectively in the changing job market. This course is designed to assist students in understanding and operating in this difficult job market. Using many of the concepts that organizations use in their strategy formulation process, and coupled with individual techniques and skills proven effective in job searches and career planning, this course prepares students to deal with the issues involved in finding a job and pursuing a career. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6803 - Visionary Leadership (3 Credits)

Examines the challenges faced by visionary leaders and the approaches used by these individuals (creation, articulation, and implementation of vision) to transform organizations. Participants utilize these approaches employed by effective leaders to develop plans for their own organizational success. Group experiences, applied readings, and videos are used to clarify the opportunities available. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6804 - Negotiation and Conflict Management. (3 Credits)

Designed as a seminar in negotiation and conflict management. Students will practice and develop negotiation and conflict management skills as they use them to craft deals and resolve differences. Students will learn how negotiation and conflict management strategies and tactics vary depending on the situation encountered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6806 - Corporate Entrepreneurship (3 Credits)

Competitive performance in a global economy requires continuous innovation and new business growth. The creation and development of new ventures is a primary strategy for internally-generated growth. Managing innovation and new ventures requires attitudes, knowledge, and practices different from those usually required for the management of mature business units. This course provides the perspective, knowledge, and specific skills required for successful entrepreneurial management. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6808 - Leadership Development (3 Credits)

Instruction in the design and practice of leadership development. Case studies of effective organizations will be examined and a variety of assessment and development activities will be completed as part of the course. Students will learn how to develop others while experiencing the development techniques first hand. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6820 - Management Field Studies (3 Credits)

The objective of this course is to provide an opportunity for the in-depth examination of an actual management problem in a local organization. Much like an independent study conducted under faculty guidance, each student will execute a unique project suited to his or her interests. Priority is given to MGMT students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6821 - Managing for Sustainability (3 Credits)

This course will consider how companies are using social responsibility as a competitive advantage. The so-called green revolution is calling for organizations to take on increasing responsibility for environmental conservation, employee well being, and community development. This course considers how organizations can work with various stockholders (employees, customers, communities, society-at-large) to develop and promote mutually beneficial products and solutions to key social needs and concerns. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6822 - Business Ethics and Corporate Social Responsibility (3 Credits)

Covers business ethics and corporate social responsibility in the global contexts of employment, marketing, product liability, the environment and other areas. Students compare ethical theories, including utilitarianism, Kantian, Rawlsian, stockholder, stakeholder and social contract and apply some or all of these theories to actual and hypothetical case studies. The doctrine of corporate social responsibility is defined and explored and diverging views of corporate social responsibility are discussed. Examples of how corporate social responsibility can increase a company's goodwill and net income are analyzed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6823 - The Sustainable Business Opportunity (3 Credits)

This course examines the negative impact of a rapidly growing global economy on the natural and human environment. It shows that the need to create a more sustainable global economy represents a huge opportunity for business and how sustainability-based strategies drive innovation, competitive advantage and improved financial performance. It will examine both environmental aspects of sustainability like green supply chains, lifecycle analysis, energy and water efficiency, as well as initiatives that nurture and enhance the value of our human resources such as community development, employee and customer relations, employee wellness, telecommuting, and other stakeholder engagement in sustainability. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MGMT 6824 - Sustainable Business/CSR Field Study (3 Credits)

Gain practical, hands-on experience with aspects of sustainable business and/or corporate social responsibility. Work with a local company/non-profit/or government organization under the direction of an executive to conduct a sustainability-focused project which is important to the organization's sustainability initiative. Prereq: Completion of one or more sustainability focused courses or permission of instructor. Cross-listed with MGMT 4824. Max hours: 3 Credits.

Grading Basis: Letter Grade

Pre: ACCT 6285orBUSN 6826or6830or6850or6870orDSCI 6826/BANA 6730orENTP 6642 or 6644or6808or6858or6860orINTB 6870orMGMT 6821or6822or6823orMKTG 6830 Restriction: Grad and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good (3 Credits)

This course develops leadership from the perspective of managing the people side of change required to transform a traditional business to one that is not only financially successful but also a genuine "force for good" for our natural and social environment. The B Lab Impact Assessment tool is used to measure, monitor, and link sustainable business practices to drive continuous improvement and innovation. Students will conduct hands-on, practical work with local businesses to develop change leadership skills as they relate to sustainability. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with MGMT 4825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6826 - Business for a Better World (3 Credits)

Introduces the main concepts and tools of sustainable business, such as life-cycle analysis, circularity, Context-based sustainability, carbon footprinting, market failure, closed-loop systems, DfE (Design for the Environment), corporate sustainability reporting, then examines how companies can move from doing less bad to making the world better. Note: Typically offered in the Fall. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

MGMT 6827 - Global Climate Change (3 Credits)

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6830 - Sports and Entertainment Management (3 Credits)

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, managing revenue streams, managing media, managing for effectiveness, managing post-merger integration, leadership and leading change. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6832 - Law and Negotiation in the Sports/ Entertainment Industries (3 Credits)

Provides an overview of major legal issues in the sports and entertainment industries. Students develop the skills required to negotiate contracts in these industries. Topics include contracts with athletes (agency, player and sponsorship), stadium financing and sports franchises, labor law and collective bargaining agreements, entertainment contracts in the music, film and live theater fields and copyright, trademark and tort law principles in the sports and entertainment industries. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6834 - London Calling: Global Sports and Entertainment Management (3 Credits)

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MKTG 4834, and MKTG 6834. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6840 - Independent Study (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Additional Information: Report as Full Time.

Marketing (MKTG)

MKTG 5939 - Internship (1-3 Credits)

Supervised experiences involving the applications of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

MKTG 6010 - Marketing Strategy (3 Credits)

Focuses on marketing strategy and marketing planning. Addresses the formulation and implementation of marketing plans within the context of the overall strategies and objectives of both profit and not-for-profit organizations. There is heavy emphasis on group projects and presentations. Note: This course is intended to be taken near the end of your program. Prereq: BUSN 6560 completed with a C or better. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6560 completed with a C or better Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6020 - Marketing Challenges at the Global Frontier (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with INTB 6026. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6030 - Sales and Sales Force Management (3 Credits)

Focuses on issues in personal selling and managing the field sales force. Deals with organization sales analysis, forecasting, budgeting and operating, with particular emphasis on the selling task, recruiting, selection, training, compensation, supervision and motivation. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Spring.

MKTG 6040 - Services Marketing for Traditional and Creative Industries (3 Credits)

Service industries such as health care, finance, information, entertainment, retailing, government, and professional services comprise 80% of the total employment and GDP of the US and an increasing share of GDP in both other developed and emerging economies. This course provides students with the skills to design and deliver high quality services, improve customer satisfaction, and effectively manage service organizations. It also addresses how small, medium, and large firms can develop marketing plans and strategies in the current service environment. A variety of teaching methods may be used to demonstrate these concepts, such as cases, projects, field experiences, and/or guest speakers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6050 - Market Research Analytics I (3 Credits)

The objectives relate to effective marketing information management and include: (1) developing an understanding of the techniques and procedures that can be used to generate timely and relevant marketing information; (2) gaining experience in developing and analyzing information that is decision oriented; and (3) being able to make recommendations and decisions based on relevant and timely information. Computer analysis and projects are employed. Coreq: BUSN 6560 or 6530 or BANA 6610. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 or 6530 or BANA 6610 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6051 - Market Research Analytics II (3 Credits)

This course focuses on advanced topics and applications in marketing research. A variety of teaching techniques will be used. Prereq: MKTG 6050. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MKTG 6050 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

MKTG 6060 - Consumer Intelligence—Psychology and Behavior (3 Credits)

Why do consumers buy? How can marketing activities influence buyer behavior? Answers to these questions are key to marketing success & business fortune. In this course, we explore how to understand the heart & soul of consumers & examine the strategic implications of consumer psychology. Course participants conduct a market segmentation project that identifies & dissects various buyer groups within a chosen market. Restriction: Restricted to graduate business students or NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MKTG 6070 - Brand Identity & Marketing Communication Strategy (3 Credits)

A brand's identity has a substantial influence on an organization's financial wealth. But brand identity is not simply the result of a great product or a creative ad. Utilizing many real examples, historic approaches, and current trends, this course explores how integrated marketing communications help build a brand identity that reverberates with consumers. Participants create an integrated marketing communications campaign. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6080 - Marketing in Emerging Markets (3 Credits)

Explores problems, practices and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, government, legal, systems and economic conditions as they affect marketing planning. Coreq: BUSN 6560. Note: students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with INTB 6082. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6090 - Big Data Customer Relationship Management (3 Credits)

Involves the management of customer relationships to maximize customer service and its associated benefits at minimal cost. Includes services marketing concepts and techniques, IT applications, and software. Designed to acquaint students with practices and issues in state-of-the-art customer relationship management systems in an array of different types of organizations. The course initially focuses on the nature of customer relationship management (CRM) the interaction between strategic management planning, corporate culture and CRM. Other topics examined include successful models of CRM, managing the employee or CRM interface, marketing research, and CRM, and customer trust, loyalty, CRM customer service levels, customer service levels, customer profitability or metrics, selecting and integrating CRM software, CRM integration and timing of CRM roll-out. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6091 - Strategic Product Marketing (3 Credits)

Familiarizes students with key theories and practices regarding products. Successful development of a new product, or extending the life cycle of an existing product. Outlines and necessitates the understanding of product development, key concepts related to successful product management over the course of its life cycle including the way the product function adds synergy to other marketing activities and, in turn, benefits from them. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6092 - Digital Media Marketing - Tools and Analytics (3 Credits)

This course focuses on digital marketing management, skills, applications, and analytics. Topics include web design, web analytics, online advertising, search engine optimization, search engine advertising, email marketing, social media marketing and online reputation management. Students engage in hands on applications in developing digital marketing campaigns in both simulations and for real brands.

Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6093 - Hot Topics in Digital Marketing (3 Credits)

Students attend The Digital Marketing Summit Conference in Denver, CO. Conference speakers include Leaders in the field of Digital Marketing. Participants will learn about the latest & greatest hot trends in Digital Marketing going on NOW! This conference also includes networking sessions with national industry Leaders and Denver's "Digiterati" community. Numerous state of the art topics include Content Marketing, Search & SEO, Social Media, Mobile, Social Intelligence Data, Wearables, and Engagement. The course builds on this content in a HYBRID format in which participants continue to engage in online learning & discussion, while applying these concepts to create their own unique digital programs. The Digital Conference constitutes the classroom portion of the course and the remainder is completed via additional reading & application under the direction of the course Professor. Enrollment is limited so make plans early. Contact the Director of the Marketing Discipline (Vicki.lane@ucdnever.edu) to reserve your spot. Special conference fees apply. Restriction: Restricted to graduate majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors within the Business School.

MKTG 6094 - Marketing Issues in the Chinese Environment (3 Credits)

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with INTB 6094. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6200 - CRM, Big Data, and Marketing Metrics (3 Credits)

CRM (Customer Relationship Management) involves the management of customer relationships to maximize customer benefits at minimal cost. It facilitates decision making about marketing strategies and tactics that are informed by the actual financial outcomes of these decisions. This course provides a toolkit of skills that will help in three areas, 1) identifying important marketing metrics, 2) making accurate assessments of metrics, and 3) applying the results to future decisions. Other topics include successful models of CRM, big data, marketing research, customer trust, customer loyalty, customer profitability, and CRM software. Coreq: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6700 - Marketing Travel Study (3 Credits)

This is a 2-week travel course, designed to focus on the marketing of the specific country we visit. In the past the travel course has been to Spain and Costa Rica, but the country of destination may be different every time (usually offered every other year). While in the country, students will visit companies (such as advertising agencies, marketing research firms, local grocery stores, marketing departments of multinational corporations, etc.), have lectures/discussions on marketing in that country and work on a marketing plan for a local company or not-for-profit organization.

Prereq: BUSN 6560 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6800 - Topics in Marketing (3 Credits)

Courses offered irregularly for the purpose of presenting new subject matter in marketing. Consult the current 'Schedule Planner' for semester offerings. Prereq: BUSN 6560. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6820 - Sports & Entertainment Marketing (3 Credits)

This course focuses on techniques for formulating marketing plans for various types of sports organizations. The course deals with marketing issues particularly germane to sports organizations such as: fans as consumers, fan loyalty, sports pricing, servicescapes, player development and sports sponsorships. This course includes lectures, guest speakers, cases, examinations and student group projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6822 - "Fan"tastical Consumers of American Sports and Entertainment (3 Credits)

This course explores the study of consumer behavior via the lens of American Sports and Entertainment. Class occurs while students attend a variety of sports and entertainment performances. Students engage in experiential learning via participant and observation research techniques as they attend live performances of American sports and entertainment. The class will attend and study consumers and fans in a variety of venues, (e.g., Baseball, LaCrosse, Fun Run, Hike, Golf, Symphony, Rock Concert Festival, Jazz Concert Festival, American Ninja Warrior filming, Broadway Play, Cirque de Soleil, and Museum exhibition). These performances primarily take place in downtown centers, e.g., Pepsi Center, Denver Performing Arts Complex, Coors Field, Sports Authority Field at Mile High, Walk or run through various Denver parks, 16th St. Mall, The Civic Center, the Denver Art Museum. Students will engage in observational and immersive consumer behavior research techniques as part of their experience. They will complete assignments relevant for consumer understanding and business practice. Special fee. Co-Req: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6824 - Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries (3 Credits)

This course focuses on developing sales skills and techniques for success in the sports and entertainment industries. Students also develop the skills required to negotiate contracts in these industries. Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Max hours: 3 Credits. Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6826 - The Sports and Entertainment Industry (3 Credits)

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, management challenges, financing in sports and entertainment business (e.g., stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues, franchises, and managing disparate revenue streams), and major legal issues in the sports and entertainment industries (entertainment contracts, copyright, trademark and tort law). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MKTG 6830 - Marketing & Global Sustainability (3 Credits)

Marketing & Global Sustainability focuses on the role of marketing in sustainable for-profit and not-for-profit companies from a global perspective. The course examines sustainable business practices and trends; green brands, green labels, and greenwashing; socially-conscious and "green" customer segments; innovating for sustainable new products and services; sustainable retailing and supply chains; and sustainability as a competitive advantage. The course will employ a variety of pedagogical techniques including lectures, discussion, guest speakers, case studies, and projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6834 - Global Sports & Entertainment Management (3 Credits)

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MGMT 6834, and MKTG 4834. Restriction: Restricted to graduate business school students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

MKTG 6840 - Independent Study (1-8 Credits)

Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Prereq: Permission of instructor. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Entrepreneurship (ENTP)

ENTP 5939 - Internship/Cooperative Education. (3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

ENTP 6020 - Business Model Development & Planning (3 Credits)

Jointly taught by a successful Colorado entrepreneur and an experienced professor, this course familiarizes students with the key steps for preparing a business plan for a new (or existing) business venture.

This course provides real-world feedback and advice and integrates coursework with THE CLIMB | Jake Jabs Business Plan Competition events to further enhance the quality of one's business concept. Several past students have won prizes at THE CLIMB and launched successful businesses from concepts developed in the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6022 - Digital Strategy for Entrepreneurs (3 Credits)

This course focuses on how digital innovations are disrupting traditional business practices. Students will participate in a team project where they identify an industry prepared for disruption, and then develop a relevant digital strategy. Students can also expect industry leaders from some of Colorado's greatest digital and tech companies as guest speakers. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6028 - Global Study Topics (3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, INTB 4028, and INTB 6028. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6030 - Entrepreneurship in Emerging Industries (3 Credits)

How entrepreneurs in emerging industries raise capital, find talent, attract customers, manage regulatory uncertainty, and respond to opposition. Focus on blockchain tech, renewable energy, fracking, and sharing economy, we will discuss the challenges and opportunities facing entrepreneurs pioneering new/controversial products and practices. We will also examine how these lessons generalize to innovation in other industries. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6100 - Digital Advertising for Entrepreneurs (1.5 Credits)

This course explores current trend in digital advertising that affect the industry today, especially small businesses. All of these concepts are critical to an entrepreneur who is attempting to launch a business. We will explore advertising in social media advertising, display advertising and affiliate marketing for entrepreneurs. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

ENTP 6110 - Innovation in Fintech (1.5 Credits)

The class has four focus areas. The first covers the fields in which fintech is operating, such as financial education, crypto currency, retail banking and investment. The second examines examples of fintech, including trading apps, peer-to-peer lending and robo-advisors. The third analyzes the four types of users. The fourth is about fintech innovations in machine learning and AI. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

ENTP 6420 - Ethics: Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6620 - New Venture Operations and Project Management (3 Credits)

Many viable businesses have failed due to cash flow problems, poor management, and poor execution. This course presents students with an operations model for developing internal and external plans when starting new ventures. Utilizing both academic fundamentals and practical knowledge imparted by an experienced instructor, this course provides the project management knowledge and skills needed to build strong operation plans. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

ENTP 6644 - Impactful Social Innovation (3 Credits)

Innovations in social organizations are unique and warrant equally unique startup strategies for success. This course takes students through various stages of the social enterprise development process, from building competitive business models to attracting investors to operationalizing the business concept successfully while simultaneously doing social good. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

ENTP 6800 - Special Topics in Entrepreneurship (3 Credits)

A variety of topics in entrepreneurship are offered. Consult the current 'schedule Planner' for semester offerings. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

ENTP 6801 - Building Biotechnology (3 Credits)

This course teaches students the fundamentals of life science technology in entrepreneurship. Serving as an introduction to bioinnovation and entrepreneurship, topics covered include tech transfers, accounting and finance basics, opportunity assessments, legal and regulatory environments, clinical trials, project management best practices, ethics and societal issues, and team building. Cross-listed with IDPT 6301. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

ENTP 6802 - Regulatory Environment of Life Science Innovation (3 Credits)

This course is designed to familiarize graduate-level engineering, business, law and life science students with the fundamentals of life science technology commercialization including drugs, devices, diagnostics, and healthcare IT and platform applications. Cross-listed with IDPT 7302. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

ENTP 6807 - Personal Branding (3 Credits)

This course is designed to show students how to create successful personal brand strategies for professional and personal development in both entrepreneurial and intrapreneurial environments. The course work will demonstrate the imperative link between marketing and personal branding through case studies, projects, guest speakers and reading materials. Students will also leave the course knowing how to develop and implement a personal branding plan. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Summer.

ENTP 6822 - Legal and Ethical Issues of Entrepreneurship (3 Credits)

This course addresses the legal issues most frequently encountered by entrepreneurs and others involved in startups and small, closely held or family businesses. The focus is on how to avoid legal problems and how best to cope when they arise. Topics include choice of business form, legal aspects of raising capital, taxation, intellectual property law, employment law, product liability, e-commerce and the problems of managing lawyers and litigation. Note: Cannot receive credit for both BUSN 6540 and this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6824 - Entrepreneurial Financial Management (3 Credits)

This course provides a foundation for the financial management of an entrepreneurial business. Topics covered include differentiation from traditional corporate financial management assumptions, financial aspects of setting up a business, and how to create, evaluate, forecast, and analyze future financial statements. Students will examine theoretical and practical valuation techniques, considerations for buying versus starting a business and franchising. The course also discusses different choices for financing a new business, venture capital, angel financing, crowd funding, private equity and security laws, harvesting alternatives, and financial distress turnaround considerations. Cannot receive credit for both FNCE 6460 and this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6826 - International Entrepreneurship (3 Credits)

This course focuses on the intersection of international business and entrepreneurship. Topics addressed include international entrepreneurship theory and practice (opportunity identification, processes and route to market). This course also highlights new topics in international entrepreneurship such as digital globalization and new technologies driving international entrepreneurship (blockchain and the global supply chain). Leading practitioners and entrepreneurs will be facilitating these modules. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6834 - Lean Marketing (3 Credits)

This course teaches students how to create successful marketing strategies in entrepreneurial environments where resources are often limited and negative outcomes can be unforgiving. The course work will demonstrate the imperative link between the fundamental marketing principles and entrepreneurial lean marketing guiding principles through real-life case studies, project, videos, podcasts and reading materials. Student will leave this course understanding how to develop an effective and pragmatic marketing plan for an entrepreneurial venture. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6840 - Independent Study: ENTP (3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ENTP 6842 - New Concept Development (3 Credits)

This course provides insights and tools that will help students assess the viability of new business concepts (a.k.a. those in the very early stages of development). Unlike the “business plan” course where students create an actual plan, this course will help students determine if a new business concept is truly worthy of a business plan. The main objective of the course focuses on understanding problems and solutions from the potential market’s perspective. The value of the problem-solution approach is that it quickly gets to the reason why people buy things: to solve perceived problems. Along the way students will employ various experiential and theoretical learning aids to investigate a series of relevant topics such as product markets, new business concepts and entrepreneurial risk-taking. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6848 - Leadership in New Ventures (3 Credits)

This course provides students with an overview of key leadership principles for creating strategy and managing teams in a startup environment. It introduces leadership concepts critical to gaining true organizational commitment and focuses on case studies relevant to common business issues. By exploring what entrepreneurial leaders actually do and how visionary leadership is required to develop an organization, students will learn how to execute these concepts through measurable goals and objectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

Risk Management (RISK)

RISK 6129 - Practical Enterprise Risk Management (3 Credits)

Enterprise RM involves identifying the risks and opportunities faced by a firm, assessing them, developing and implementing a plan to address them, and then monitoring progress. Students will learn the basics of ERM while working with risk management professionals to develop and present such a plan to an ongoing business. Cross-listed with RISK 4129. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6209 - Cyber Risk Management (3 Credits)

Computer networks and the data that travels upon them are under constant and increasing attack. This course will focus on a discussion of how state and non-state actors utilize this form of asymmetrical warfare to infiltrate government and corporate networks, risk management responds and risk strategies apply. Cross-listed with RISK 4209. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6309 - Strategic Risk Management (3 Credits)

This course introduces strategic risk management, the process of managing the uncertain and unknown risks to a firm’s plans to add value to its owners and society. Cross-listed with RISK 4309. Max Hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6409 - Employee Benefits and Workforce Risk Management (3 Credits)

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with RISK 4409 and MGMT 4460/6760. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6509 - Global Risk Management (3 Credits)

This course is designed to study how risk is transferred globally. The course will include travel to London, which is the home to many of the world’s largest insurers and reinsurers. While in London, we will visit and have presentations from insurance brokers, companies, Lloyds of London, and reinsurers. Prereq: One RISK course. Cross-listed with RISK 4509.

Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: One RISK Course

RISK 6709 - Life and Health Insurance (3 Credits)

This course introduces students to life and health insurance concepts and policy types with an emphasis on insurance planning for individuals and businesses. The insurance industry and trends within are also explored. Prereq: BUSN 6640. Cross-listed with RISK 4709. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640

RISK 6809 - Principles of Risk Management & Insurance (3 Credits)

This course prepares students for advanced work in insurance and RM. The course first covers the nature of risk and risk fundamentals, insurer operations and insurance regulation. It then considers the principal techniques of managing risk exposures and the basis of decision making in management of business and personal risks. Coreq: BUSN 6640 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6640

RISK 6840 - Independent Study (3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6909 - Corporate Risk Management (3 Credits)

This course provides an overview of the corporate risk management process. It considers the ways companies identify their risk exposures, the tools used to measure and mitigate those exposures including the latest developments in alternative risk transfer, and ultimately, how risk management adds value to the firm. Co-req: BUSN 6640. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6640

Sustainability (SUST)

SUST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Accounting, MS

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E-mail: Katherine.Gunny@ucdenver.edu

Introduction

Whether you are considering CPA licensure or just looking to accelerate your accounting career, a Master of Science in Accounting will help you achieve your goals. The coursework gives students the technical accounting competencies and critical thinking skills necessary to support

a successful career in all accounting areas including public or private accounting, nonprofit, government, or tax.

We offer a 4+1 program that allows our current undergraduate accounting students to pursue the master of science degree, if they achieve a cumulative GPA of 3.00 or higher in the Intermediate series (ACCT 3220 Intermediate Financial Accounting I, ACCT 3230 Intermediate Financial Accounting II, and ACCT 3320 Intermediate Cost Accounting), without taking the GMAT test. Students are also allowed to replace two undergraduate required accounting courses with two graduate accounting courses. If you are interested, please contact the Business School Advising team.

The MS accounting degree consists of 30 required hours + 9 hours of prerequisites that may be waived based on prior coursework.

Accounting Prerequisites: (9 Hours)

The MS in accounting requires completion of the following accounting prerequisites.

Required Prerequisite Courses (advisor will evaluate transcript for possible waivers, grades must be a C or better to be considered for possible waiver):

Code	Title	Hours
Required Prerequisite Courses		
ACCT 6031	Intermediate Financial Accounting I ¹	3
ACCT 6032	Intermediate Financial Accounting II ²	3
ACCT 6140	Fundamentals of Federal Income Tax ³	3
Total Hours		9

¹ Equivalent undergraduate course: ACCT 3220 Intermediate Financial Accounting I

² Equivalent undergraduate course: ACCT 3230 Intermediate Financial Accounting II

³ Equivalent undergraduate course: ACCT 4410 Fundamentals of Federal Income Tax

Accounting Core: (24 Hours)

Students may not receive graduate credit for undergraduate coursework and may not retake any course successfully completed at the undergraduate level with a grade of "C" or better. An advisor will evaluate prior coursework to determine possible substitutions.

Code	Title	Hours
ACCT 6020	Auditing Theory	3
ACCT 6024	Advanced Financial Accounting	3
ACCT 6054	Accounting Information Systems	3
ACCT 6150	Taxation of Business Entities	3
ACCT 6250	Seminar: Financial Accounting	3
ACCT 6260	Seminar: Managerial Accounting	3
ACCT 6280	Accounting Ethics	3
ACCT 6620	Seminar: Auditing and Other Assurance Services	3
Total Hours		24

Accounting Electives: (6 Hours)

Choose two from the following courses (unless otherwise noted, all courses are 3 credit hours):

Code	Title	Hours
Select two of the following:		6
Any ACCT 6000 course or higher		
ACCT 6080	Accounting for Government and Nonprofit Organizations	
ACCT 6330	Fraud Auditing	
ACCT 6340	Financial Statement Analysis	
ACCT 6370	International Accounting	
ACCT 6400	Taxation of C Corporations and Shareholders	
ACCT 6410	Advanced Tax for Individuals	
ACCT 6450	Tax Research	
ACCT 6480	Partnership Taxation	
ACCT 6520	Issues in Oil and Gas Accounting	
ACCT 5939	Internship	
Total Hours		6

Business Administration - Health Administration, MBA

Program Director: Rulon Stacey

Telephone: 303-315-8851

E-mail: Rulon.Stacey@ucdenver.edu

Introduction

The graduate program in health administration is consistently ranked as a top program in the United States and attracts students with a variety of backgrounds and experience levels, which further enriches the classroom experience. The HA program is accredited by the Commission on Accreditation of Healthcare Management Education. Full-time faculty with distinguished research records and a select group of practicing managers provide students with the latest thinking on the most important health issues.

Degree Requirements

The curriculum of the MBA in Health Administration is a synthesis of management concepts and techniques that are applicable to any economic organization and tools that can be specifically applied to health services systems. The program emphasizes skills that strengthen basic analytic and decision-making processes used by top-level managers in selecting broad strategies and by junior managers in administering sub-units in healthcare organizations.

Students enrolled in the Master of Business Administration in Health Administration must complete a minimum of 45 semester hours of graduate-level course work to receive their degree. The curriculum is based on a series of structured learning sequences. All of the courses are available in the evening to enable working students to pursue the degree on a part-time basis. The specific course requirements are as follows:

Code	Title	Hours
MBA Core		
BUSN 6521	Leading Individuals and Teams	3
BUSN 6530	Data Analytics for Managers	3

BUSN 6541	Legal and Ethical Environment of Business (Health Section)	3
BUSN 6550	Analyzing and Interpreting Accounting Information	3
BUSN 6561	Marketing Dynamics in the 21st Century (Health Section)	3
BUSN 6621	Applied Economics for Managers (Health Section)	3
BUSN 6640	Financial Management	3
BUSN 6711	Strategic Management (Health Section) ¹	3
Health Administration Core		
HLTH 6010	Health Care Systems	3
HLTH 6070	International Health Policy and Management	3
HLTH 6730	Healthcare Operations Management	3
HLTH 6770	Healthcare Quality and Outcomes	3
HLTH 6911	Health Field Studies ²	3
Health Administration Information Technology Elective		
HLTH 6071	Introduction To Health Information Technology	3
or HLTH 6072	Management of Healthcare Information Technology	
Health Administration Electives		
Select one of the following:		3
ENTP 6801	Building Biotechnology	
ENTP 6848	Leadership in New Ventures	
HLTH 6075	International Health Travel Study	
HLTH 6740	Profiles in Health Care	
ISMG 6810	Business Intelligence in Healthcare	
Total Hours		45

¹ This course is intended to be taken in your last Spring semester.

² This course is intended to be taken in your last Spring semester.
Prereq: HLTH 6010 Health Care Systems or consent of instructor, minimum 3.0 cumulative GPA.

Specialized Tracks within the MBA in Health Administration

Each track carries its own specific course requirements. To provide a variety of perspectives and experiences within a specific area of health administration, each track includes courses that span various departments within the Business School, other schools at CU Denver, and other University of Colorado campuses.

- International Health Management and Policy Track
- Financial Management Track
- Health Information Technology Management Track

Notes and Restrictions

Administrative Residency or Fellowship. An administrative residency or fellowship is optional but recommended for students with limited healthcare experience. The program faculty provide guidance to students applying for residencies or fellowships. Information on the full range of local, regional, and national residencies or fellowships is available from the program director.

Length of program. A maximum of five years and one semester is allowed to complete the Health Administration program.

Business Administration, MBA

Program Director: Gary Colbert

Telephone: 303-315-8443

E-mail: Gary.Colbert@ucdenver.edu

Introduction

The Master of Business Administration (MBA) program provides a general background in management and administration. This background enables the student to have the breadth and depth of knowledge required for an advanced-level management career. The program is designed to develop the concepts, analytical tools and communication skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The professional MBA program allows the scheduling of classes with maximum flexibility so students can progress through the program at their own pace, by taking as little as one class per semester or as many as five classes per semester, at times that accommodate work schedules. Students may complete on-campus courses at our downtown Denver campus. The program can be completed in as little as 16 months or as long as five years plus one semester.

Online courses add additional flexibility. Students may complete all degree requirements online, or combine online and campus courses to broaden the choice of electives or to fit a business travel schedule or personal learning style. We also offer a fully-online MBA program that is designed for the working professional and features eight-week terms. For more information on the fully-online route, please click here.

The MBA program is also available in different configurations: The One Year MBA (p. 110) and the Health Administration and the Executive MBA (p. 116). All MBAs have similar curriculum requirements; they differ principally in focus, the flexibility of course scheduling, and the time required to complete the program. The One Year and Executive MBAs are lockstep programs, where students form a cohort and complete all program requirements together. No course transfers, waivers or substitutions are permitted.

Program Requirements

Code	Title	Hours
Core Requirements		
BUSN 6520	Leading Individuals and Teams	3
BUSN 6530	Data Analytics for Managers	3
BUSN 6540	Legal and Ethical Environment of Business	3
BUSN 6550	Analyzing and Interpreting Accounting Information	3
BUSN 6560	Marketing Dynamics in the 21st Century	3
BUSN 6610	Information Systems Strategy	3
BUSN 6620	Applied Economics for Managers	3
BUSN 6630	Management of Operations	3
BUSN 6640	Financial Management	3
BUSN 6710	Strategic Management	3
International Elective		
	Any course numbered 6000 or higher with INTB prefix or any graduate level business course that is cross-listed with an INTB prefix or RISK 6509 Global Risk Management. ¹	3
Free Electives		
	Select 12 credit hours or MBA Specialization ²	12
Total Hours		45

¹ May also include the following: ENTP 6826 International Entrepreneurship, MTAX 6431 Inbound International Taxation, or RISK 6209 Cyber Risk Management. Travel studies offered by the Business School will also apply.

² Any course numbered 6800 or higher with BUSN prefix or any course numbered 6000 or higher with prefix of ACCT, BANA, CMDT, ENTP, FNCE, INTB, ISMG, MGMT, MKTG, MTAX, or RISK. Students may also select a MBA Specialization (p. 111).

Core Substitution: Students with extensive and comparable course work in a particular core subject area may petition to substitute a higher-level graduate course on the basis of prior undergraduate or graduate course work taken at a regionally accredited college or university for the corresponding core class. This does not waive the 48-hour requirement. If a core course is substituted, another graduate level course in the same functional area must be used as a substitute so that the student completes a total of 48 semester hours.

MBA Specializations

Graduate students will have an opportunity to take specialized tracks within the professional MBA program by completing a pre-specified program of elective courses. The following 15 specializations are available:

Accounting

Students need to complete the required courses for a total of 4 courses for the specialization. Students who have completed equivalent courses to the ones listed below can substitute any ACCT course numbered 6000 or higher for courses in which they have been waived. Please contact an advisor for course waivers.

Code	Title	Hours
Required Courses		
ACCT 6031	Intermediate Financial Accounting I	3
ACCT 6032	Intermediate Financial Accounting II	3
ACCT 6140	Fundamentals of Federal Income Tax	3
Any ACCT 6000 level course		3
Total Hours		12

Bio-innovation and Entrepreneurship

The Jake Jobs Center for Entrepreneurship is pleased to offer a specialization in Bio-innovation and Entrepreneurship, which is the first of its kind in the country to be offered by an AACSB accredited graduate business school. Taking advantage of the Colorado's bio-cluster, in collaboration with faculty at Anschutz Medical Campus, this specialization is one-of-a-kind, and is geared to helping bio-entrepreneurs achieve commercial success. Additionally, you have opportunities to participate in a number of Jake Jobs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connections to many new Colorado ventures.

Code	Title	Hours
ENTP 6801	Building Biotechnology	3
or ENTP 6802	Regulatory Environment of Life Science Innovation	
ENTP 6020	Business Model Development & Planning	3
or ENTP 6022	Digital Strategy for Entrepreneurs	
Select two other ENTP courses numbered 6000 or higher ¹		6

¹ excluding ENTP 6801 Building Biotechnology or ENTP 6802 Regulatory Environment of Life Science Innovation.

Business Analytics

Business analytics merges data, technology, and mathematical models to produce evidence-based information relevant for today's business and government decision-making.

This specialization in business analytics trains you to construct and interpret models of big data, forecasting, optimization, and simulation. Analytics touch every aspect of business, driving the way businesses understand not only their own processes, but also the way their customers behave.

Code	Title	Hours
Required Courses		
BANA 6610	Statistics for Business Analytics ¹	3
BANA 6620	Computing for Business Analytics	3
BANA 6670	Prescriptive Analytics with Optimization	3
Select one additional BANA 6000 level course or 1 of the following:		3
ECON 5030	Data Analysis with SAS	
ISMG 6080	Database Management Systems	
ISMG 6470	Text Data Analytics	
Total Hours		12

¹ To enroll in BANA 6610 Statistics for Business Analytics, you must submit a petition that demonstrates your quantitative ability with either a GMAT quantitative score or other quantitative skills. Contact your advisor for the petition form. If approved, BANA 6610 can serve as a substitute for BUSN 6530. See advisor for details.

Business Intelligence

Modern business runs on information. Success may depend on the quality of the collection and analysis. Business Intelligence (BI) systems combine operational data with analytical tools to present complex and competitive information for planning and decision making, and improves the timeliness and quality of inputs to the planning and decision process.

Code	Title	Hours
Select four of the following:		12
ISMG 6080	Database Management Systems	
ISMG 6220	Business Intelligence Systems and Analytics	
ISMG 6430	Information Systems Security and Privacy	
ISMG 6470	Text Data Analytics	
ISMG 6480	Data Warehouse and Administration	
ISMG 6810	Business Intelligence in Healthcare	
ISMG 6820	Business Intelligence and Financial Modeling	
Total Hours		12

Business Strategy

Business Strategy examines the development of firm strategic plans and implementation including careful resource allocation and leadership skills essential for organizations to effectively meet their objectives. With this specialization, you get the necessary skills and knowledge used to develop and implement business strategy.

Select 4 of the following courses: (**Note:** if you want additional flexibility, you may select 2 from this list (rather than 4) and 2 from the additional elective list below)

Code	Title	Hours
Select four of the following:		12
MGMT 6610	Business Strategy Lab	
MGMT 6730	Human Resources Management: Performance Management	
MGMT 6803	Visionary Leadership	
MGMT 6804	Negotiation and Conflict Management.	
MGMT 6825	Sustainable Change Leadership: Turning Business Into a Force for Good	
Total Hours		12

If you wish additional flexibility, you may select two from the list above and select up to 2 of the following CMDT, ENTP, FNCE, INTB, MKTG or RISK courses:

Code	Title	Hours
CMDT 6682	Commodity Valuation and Investment	3
ENTP 6022	Digital Strategy for Entrepreneurs	3
ENTP 6826	International Entrepreneurship	3
FNCE 6310	Financial Decisions and Policies	3
FNCE 6340	Business Firm Valuation	3
FNCE 6382	Survey of Financial Derivatives	3
FNCE 6411	International Corporate Governance	3
FNCE 6420	Mergers and Acquisitions	3
FNCE 6480	Financial Modeling	3
INTB 6022	International Business Negotiations	3
or INTB 6500	International Business Consulting	
MKTG 6010	Marketing Strategy	3
RISK 6309	Strategic Risk Management	3
RISK 6909	Corporate Risk Management	3

Commodities

MBA candidates and business professionals should take this Commodities Specialization for a better understanding of the commodities market in its entirety, from both the physical and financial perspective. Students obtain the specialization by taking 4 classes (12 credits). Classes focus on commodity trading operations, investment management, investment banking, data analysis, and more. With strong industry support, courses in this specialization are catered to, and designed around, actual business problems in the commodities sector. Students will have an edge in competing for jobs in the commodity rich sectors of this state.

Code	Title	Hours
Required Courses		
CMDT 6802	Foundations of Commodities	3
Complete 3 of the following:		9
CMDT 6490	Commodity and Equity Trading	
CMDT 6582	Commodity Supply Chain Management	
CMDT 6682	Commodity Valuation and Investment	
CMDT 6782	Commodity Data Analysis	
Total Hours		12

Entrepreneurship

The Entrepreneurship specialization provides a range of focused courses geared towards individuals looking to start their own business. Courses are taught at the Jake Jabs Center for Entrepreneurship located in the heart of downtown Denver or at the new South Denver location near I25 and Lincoln Avenue. Complete four entrepreneurship courses to receive a specialization in Entrepreneurship. Additionally, you have opportunities to participate in a number of Jake Jabs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connection with new ventures.

Complete four courses total.

Code	Title	Hours
Complete 3 courses with an ENTP 6000 or higher number ¹		9
Capstone Courses		
ENTP 6020	Business Model Development & Planning	3
or ENTP 6022	Digital Strategy for Entrepreneurs	
Total Hours		12

¹ Excluding ENTP 6801 Building Biotechnology and ENTP 6802 Regulatory Environment of Life Science Innovation.

Finance

Adding the finance specialization to your degree gives you skills relevant to different financial functional areas including corporate, investments, and financial institutions. You get the tools and skill sets you need for finance decision making and investment.

Code	Title	Hours
Required Course		
FNCE 6330	Investment Management Analysis	3
Other Courses		
Select 3 FNCE, CMDT, or RISK courses 6000 level or higher.		9
Total Hours		12

Information Systems

Complete any four ISMG 6000 or higher courses.

International Business

International Business is quickly becoming simply business. Adding a specialization in International Business to your degree will help you to work internationally, and with international companies. From cross cultural management to legal aspects to marketing internationally. Prepare yourself for how business works today.

Code	Title	Hours
Required Course		
INTB 6000	Introduction to International Business	3
or ENTP 6826	International Entrepreneurship	
Other Courses		
Select three of the following:		9
Any INTB 6*** course ¹		
MGMT 6827	Global Climate Change	
ENTP 6826	International Entrepreneurship ²	
MTAX 6431	Inbound International Taxation	
MTAX 6432	Outbound International Taxation	

RISK 6209	Cyber Risk Management	
Any travel study course offered by the Business School.		
Total Hours		12

¹ Excluding INTB 6000 Introduction to International Business and INTB 6200 International Business Policy.

² If not chosen as the required course above

Management

Code	Title	Hours
Required Courses		
MGMT 6320	Leading Organizational Change	3
MGMT 6360	Designing Effective Organizations	3
Additional Courses		
Select two of the following:		6
MGMT 6821	Managing for Sustainability	
MGMT 6380	Managing People for Competitive Advantage	
MGMT 6803	Visionary Leadership	
MGMT 6804	Negotiation and Conflict Management.	
Total Hours		12

Managing for Sustainability

More than ever before, major companies and entrepreneurial ventures are seeking competitive advantage and success by embracing sustainability — social and environmental responsibility — as a core business strategy. Farsighted leaders recognize that this new way of doing business requires skills in sustainable management including social entrepreneurialism, eco-efficiency, inter-disciplinary problem solving and a triple bottom line approach of economics, environment and society. Make your degree a green MBA by adding the Managing for Sustainability specialization and learn what businesses are facing in a world where resources are scarce, social safety nets are declining, and customers and commentators are concerned about a company's investment in corporate responsibility.

Code	Title	Hours
Select four of the following:		12
ACCT 6285	Accounting and Finance for Sustainability	
BANA 6730	Supply Chain Analytics	
ENTP 6030	Entrepreneurship in Emerging Industries	
MGMT 6821	Managing for Sustainability	
MGMT 6822	Business Ethics and Corporate Social Responsibility	
MGMT 6825	Sustainable Change Leadership: Turning Business Into a Force for Good	
MGMT 6826	Business for a Better World	
MGMT 6827	Global Climate Change	
MGMT 6840	Independent Study (by petition only)	
MGMT/MKTG 5939	Internship (by petition only)	
MKTG 6830	Marketing & Global Sustainability	
Total Hours		12

Marketing

Marketing is about building long-term relationships between your firm and those who buy its offerings. Just how important is marketing to a

firm's success? Well without it there would be no way to communicate with current or potential customers and no revenues. The Marketing specialization will give you the skills and confidence needed to effectively manage a firm and in particular those aspects associated with building profitable, long-term, business relationships.

To complete the specialization select 4 MKTG 6000 level or higher courses.

You may also petition to have a marketing internship count toward the specialization. (MKTG 5939 Internship)

Risk Management and Insurance (RMI)

The specialization in Risk Management and Insurance is designed for students who are interested in pursuing or advancing a career in the insurance industry, or other areas of risk management. 50% of this industry is retiring in the next 5 to 10 years, leaving a huge need for new talent. The pervasive reality of risk affects all individuals and organizations. Specialized knowledge and understanding of risk increase students' marketability and potential for success across a wide range of industries.

Code	Title	Hours
Required Courses		
RISK 6809	Principles of Risk Management & Insurance	3
RISK 6909	Corporate Risk Management	3
Other Courses		
Select one of the following:		3
RISK 6129	Practical Enterprise Risk Management	
RISK 6309	Strategic Risk Management	
CMDT 6682	Commodity Valuation and Investment	
FNCE 6330	Investment Management Analysis	
FNCE 6350	Financial Innovations	
FNCE 6360	Management of Financial Institutions	
FNCE 6382	Survey of Financial Derivatives	
FNCE 6480	Financial Modeling	
Select one of the following:		3
RISK 6209	Cyber Risk Management	
RISK 6509	Global Risk Management	
RISK 6709	Life and Health Insurance	
BANA 6650	Project Management	
CMDT 6582	Commodity Supply Chain Management	
CMDT 6802	Foundations of Commodities	
ENTP 6824	Entrepreneurial Financial Management	
ISMG 6430	Information Systems Security and Privacy	
ISMG 6450	IT Project Management	
MGMT 6826	Business for a Better World	
MGMT 6827	Global Climate Change	
Total Hours		12

Sports and Entertainment Business

The Sports industry is the sixth largest industry in the United States and the Sports and Entertainment industries are converging. To become a professional in these industries, you need special skills. Through this specialization, you gain the tools to get ahead in both the sports and entertainment industries.

Code	Title	Hours
Select four of the following:		12
MKTG 6040	Services Marketing for Traditional and Creative Industries	
MKTG 6820	Sports & Entertainment Marketing	
MKTG 6822	"Fan"tastical Consumers of American Sports and Entertainment	
MKTG 6824	Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries	
MKTG 6826	The Sports and Entertainment Industry	
MKTG 6834	Global Sports & Entertainment Management	
Total Hours		12

Students may also petition to take a marketing internship (MKTG 5939 Internship).

Business Administration/Business, MBA/MS

Introduction

The Business School also offers MBA/MS dual degree programs for each function of business. The program consists of a minimum of 63 semester hours of graduate work and leads to both an MBA degree and an MS degree, which must be completed within seven years and one semester. See MS program pages (p. 60) for a list of functional areas. Contact a graduate academic advisor for details, 303.315.8200.

Business Administration/Medicine, MBA/MD

Introduction

The MBA/MD is for medical students at the University of Colorado School of Medicine who wish to pursue a career in administrative medicine or who seek additional training in administration or business. The program is designed to be completed in five years, at which time both the MD and MBA degrees would be awarded. Candidates for the MBA/MD complete 33 semester hours of course work in the business school and all requirements for the MD.

Business Administration/Urban and Regional Planning, MBA/MURP

Introduction

This dual degree enables students to obtain both the Master of Urban and Regional Planning offered by the College of Architecture and Planning and the Master of Business Administration offered by the Business School. Candidates for this dual degree complete 33 semester hours of course work in the business school and all program requirements as indicated by the College of Architecture and Planning. The dual degree program is composed of the core curricula in each program plus a set of electives jointly approved by the student's advisors.

Business Administration: One Year MBA

Program Director: Mary Malina

Director of Operations: Andrea Szabo

E-mail: oneyearmba@ucdenver.edu

Telephone: 303-315-8800

Website: <http://www.ucdenver.edu/academics/colleges/business/degrees/mba/1yearMBA/Pages/default.aspx>

Introduction

The One Year MBA is the fastest way to earn your MBA and gain valuable work experience at the same time. The program includes a fast-paced curriculum based on today's business world with time for innovative electives that offer relevant specialized content. Consulting projects and competitive paid internships add experience to your degree. Classes are held in person, which provides valuable interactions with faculty and classmates.

The program consists of 8 five-week terms and an international course abroad. There are occasional breaks between terms. You should expect approximately 10 hours a week in class, with another 25 hours as an estimate for homework, studying, and group projects outside of class.

Please note that these estimates do not include the time needed for consulting projects, which will generally add another 20-25 hours a week to your time commitment. These estimates also do not include possible time spent at an internship, graduate assistantship or on-campus student employment. These numbers are estimates only and may vary for each student.

Admission and Application Process

The admissions committee considers each candidate's entire record of achievement demonstrated through academic transcripts, GMAT scores, essays, required letters of recommendation, work experience and/or extracurricular and community activities. Interviews are by invitation only and may be completed in-person or through a virtual platform.

Previous Education

Applicants' complete academic records, including GPAs and previous course work, are considered. Undergraduate degrees do not have to be in business, but they must be from regionally accredited colleges or universities.

Testing

The GMAT or GRE is a requirement for application to the One Year MBA Program. Both verbal and quantitative scores on the GMAT/GRE are important indicators of potential for academic success. The GMAT website is www.mba.com (<http://www.mba.com>).

International applicants whose first language is not English must take the TOEFL or IELTS exam and earn a minimum score 90 (IBT) or 575 (PBT) TOEFL or 6.5 IELTS to be considered for admission to the One Year MBA Program. Information on taking the TOEFL or IELTS can be obtained by visiting www.ets.org (<http://www.ets.org>) and www.ielts.org (<http://www.ielts.org>).

Work Experience

The admissions committee does not require work experience to apply. Professional experience strengthens the application, as it adds

relevance and depth to the learning process and enables candidates to contribute to and benefit from the knowledge of fellow classmates in the accelerated time frame of the program.

Applications

The following are required for consideration of admission to the program.

- Application fee (domestic or international as appropriate)
- Online application for graduate admission
- Two (2) letters of recommendation from professional or academic acquaintances who are familiar with the applicant's academic/professional competence
- GMAT or GRE scores taken in the last five years sent directly from the Educational Testing Service. When registering for the GMAT, use code MPB-OG-65; for the GRE use code 4875.
- Official transcripts from each school, college or university previously attended past high school, sent directly to the Business School admissions office. A minimum baccalaureate degree is required
- Include answers to the four essay questions demonstrating a commitment to an accelerated MBA program
- A resumé outlining work experience
- For international students, a minimum official score of 90 (IBT) or 575 (PBT) TOEFL (TOEFL school code: 4875) or 6.5 IELTS is required to apply - test scores are valid for two years after test date
- If invited, a personal interview (in-person or through a virtual platform)

The One Year MBA uses a rolling admission system. The committee reviews applications when they are complete in all respects, including transcripts, GMAT/GRE scores and letters of recommendation.

Space in each cohort is limited, so we urge you to apply as early as possible. Applications open in September for the following fall start. The admission rounds provide timing guidance for you, but the program operates on rolling admissions, meaning completed applications are reviewed as they are received.

- **Round One:** December 15
- **Round Two:** February 15
- **Round Three:** April 15
- **International student final deadline:** May 15
- **Final Round for domestic students:** May 31

Scholarships are competitive and limited in number. Apply early for the best opportunity for consideration. In previous years, scholarships were allocated by April.

All of the required admission materials should be sent to:

University of Colorado Denver
The Business School
Graduate Admissions
Campus Box 165, P.O. Box 173364
Denver, CO 80127-3364

For further information, contact the One Year MBA Program at: oneyearmba@ucdenver.edu.

Financial Aid/Scholarships

General financial aid is available for qualified students. Students should apply directly through the CU Denver Office of Financial Aid (p. 46).

The One Year MBA program offers scholarships only for students enrolled in the program. You will be automatically considered for the following scholarships with the submission of your application.

One Year MBA Scholarship

From \$1,000-\$8,000 based on GPA, GMAT, and professional or personal leadership experience. If you are awarded this scholarship, the award amount will be included in your admission letter. These scholarships are first come first serve. The earlier you apply to the program, the better chance of a scholarship. In previous years, these scholarships were allocated by April, so apply to the program as early as possible to be considered.

If you commit to the One Year MBA program, you will be able to apply for the following additional scholarships. These scholarships are limited in number, but each category could have more than one recipient. These scholarships awards are up to \$5,000.

- **One Year MBA Leadership Scholarship**
- **One Year MBA CU Denver Alumni Scholarship**
- **One Year MBA STEM Scholarship**
- **One Year MBA Global Citizen Scholarship**

These scholarship deadlines are in mid-May, so you must submit your application for the One Year MBA no later than April in order to apply for these scholarships.

CU Denver also has an online portal for internal and external scholarships available to admitted CU Denver students. If admitted to the program, you will be able to access this database of scholarships.

The One Year MBA program consists of 45 credit hours. Your credit hours will be made up of core courses, electives, an international course abroad, and consulting coursework.

No courses may be waived, substituted or transferred into the program. If a student finds it necessary to leave the accelerated program, credits already earned may be transferred to the Professional MBA program.

Code	Title	Hours
Core/Required Classes		
AMBA 6201	Leading in Organizations	1.5
AMBA 6202	Workforce Management	1.5
AMBA 6210	Data Analytics I	1.5
AMBA 6211	Data Analytics II	1.5
AMBA 6220	Business Law	1.5
AMBA 6480	Creating an Ethical Business Culture	1.5
AMBA 6230	Financial Accounting	1.5
AMBA 6231	Management Accounting	1.5
AMBA 6260	Applied Microeconomics	1.5
AMBA 6261	Applied Macroeconomics	1.5
AMBA 6280	Finance Management I	1.5
AMBA 6281	Finance Management II	1.5
AMBA 6270	Operations Management	1.5
AMBA 6271	Supply Chain Management	1.5

AMBA 6301	Global Business	1.5
AMBA 6240	Marketing Principles	1.5
AMBA 6241	Marketing Strategy	1.5
AMBA 6251	Data Management Strategy	1.5
AMBA 6250	Information Systems Strategy Foundations	1.5
AMBA 6290	Strategy Foundations	1.5
AMBA 6291	Strategy in Practice	1.5
AMBA 6310	International Business Abroad	3
AMBA 6330	Introduction to Business Consulting for MBAs	1.5
AMBA 6550	Consulting in Practice	1.5
Electives		
Select 7.5 credit hours ¹		7.5
Examples of electives have included such courses as:		
Negotiations		
Investments		
Conflict Management		
Personal Branding		
Visual Analytics for Big Data		
Digital Marketing Strategy		
Digital Marketing Analytics		
Applied Business Consulting		
Managerial Accounting Seminar		
Executive Briefings		
Total Hours		45

¹ These electives are subject to change each year. Students who have an approved internship for credit, earn three credits of elective credit.

Business Analytics, MS

Program Director: Deborah Kellogg and Gary Kochenberger

Telephone: 303-315-8435

E-mail for Preferred Contact: Deborah.Kellogg@ucdenver.edu

Introduction

The MS in Business Analytics focuses on modeling and applications which prepares you for a career as a business analyst in industry or government. Today, companies in every conceivable industry are reaping the benefits of using formal mathematical models to assist them in addressing complex business problems. Business Analytics graduates hold positions that bridge the gap between operations research/statistics specialists and management.

Learn to apply quantitative methods to real-world problems using modern methodologies adopted from statistics, operations research, and management science. The MS in Business Analytics focuses on applications of mathematical models in the workplace rather than the development of new research techniques. The managerial emphasis of our degree is accomplished through a comprehensive set of elective and required coursework such as data analysis, forecasting, project management, simulation, predictive analytics, prescriptive analytics, and supply chain management. Students have the opportunity to learn current analytics tools such as R, Python, database tools, and Tableau.

This degree is designed to be completed in 18 to 24 months. However, with careful planning, in consultation with an academic advisor, full-time students may be able to complete the degree in 12 months.

Requirements for the MS degree in Business Analytics are met by the following courses and options:

Code	Title	Hours
Business Analytics Core I		
BANA 6610	Statistics for Business Analytics	3
BANA 6620	Computing for Business Analytics	3
BANA 6670	Prescriptive Analytics with Optimization	3
Business Analytics Core II		
Select three of the following:		9
BANA 6630	Time-Series Forecasting	
BANA 6640	Decision Analysis	
BANA 6660	Predictive Analytics	
BANA 6690	Network Modeling	
Business Analytics Electives		
Select any four courses ¹		12
Total Hours		30

¹ Select any four courses that include BANA courses numbered 6000 or higher as well as ISMG 6080 Database Management Systems or ISMG 6470 Text Data Analytics. Internships for credit and petitions are also considered.

Notes and Restrictions

Courses subject to change. Please reach out to graduate advising for questions.

- Students are not required to take a comprehensive examination or complete a thesis in the major field.

Note: Business School MS degrees typically allow students to transfer in 9 semester hours from another university. However, the MS in Business Analytics (BANA) allows students to petition to have a maximum of 6 semester hours transfer from another university. The transfer of *required* courses must closely reflect the educational objectives of the Master's degree in Business Analytics. The evaluation of substitute courses will include syllabi evaluation and the accreditation of the transferring institution.

Business/Business, MS/MS

Introduction

Students may concurrently pursue dual MS degrees in any two fields of business. The program consists of a minimum of 51 semester hours of core course work, which must be completed within a period of seven years and one semester.

For more information, please contact Graduate Advising by calling the front desk from Monday – Friday, 8:00 AM to 5:00 PM.

- If calling between 8:00 AM and 12:00 PM, please call **303-315-8110**.
- If calling between 12:00 PM and 5:00 PM, please call **303-315-8111**.

Executive MBA in Health Administration

Program Director: Roger Japp

Telephone: 303-315-8015

Email: roger.japp@ucdenver.edu

Introduction

The Executive MBA in Health Administration program provides healthcare professionals with a rigorous 24-month academic experience leading to the Master of Business Administration degree. The program is designed for persons who hold decision-making positions in the private and public healthcare sectors. The program builds upon the knowledge and experience of these executives with a sophisticated, challenging curriculum that can be pursued simultaneously without career interruption.

The Executive MBA program emphasizes healthcare leadership and financial analysis. Courses are taught through a variety of methods including case studies, lectures, computer simulation combined with research projects and other teaching methods.

The Executive MBA program begins in January and July annually. Classes meet for 6 days at the outset of each term, with the remainder of the semester taught asynchronously online, making it possible for those who live outside of the Denver area to participate.

Finance and Risk Management, MS

Program Director: Jian Yang

Email: Jian.Yang@ucdenver.edu

Telephone: 303.315.8423

Introduction

The master of science in finance and risk management provides the necessary depth and specialized expertise to meet the needs of businesses for financial managers, investment analysts and other finance specialists.

The program emphasizes a familiarity with the institutions in our financial system, an understanding of financial markets and instruments, and the analytical skills and tools necessary to make informed decisions about investment and financing.

The program is suited to students from a wide variety of undergraduate backgrounds and is particularly appropriate to students with strong technical and analytical backgrounds. Admission standards for the MS finance and risk management program are unique to the program. Therefore, admission to other graduate business programs does not guarantee admission into the MS finance and risk management program.

The MS in finance and risk management offers flexibility with on-campus and online courses. The MS finance and risk management degree requirements are met by the following courses and options:

Prerequisites

Prerequisites: BUSN 6550 Analyzing and Interpreting Accounting Information or the equivalent of a financial accounting course taken within the last ten years with a "B-" grade or higher. Students are also expected to be knowledgeable in spreadsheet software.

Requirements

Code	Title	Hours
Finance and Risk Management Core		
FNCE 6290	Quantitative Methods for Finance	3
BUSN 6620	Applied Economics for Managers	3

BUSN 6640	Financial Management	3
FNCE 6300	Macroeconomics and Financial Markets	3
FNCE 6330	Investment Management Analysis	3
FNCE 6382	Survey of Financial Derivatives	3
Specializations		
Select one of the following:		12
Commodities (p. 117)		
Economics (p. 117)		
Finance (p. 118)		
Financial Analysis and Management (p. 118)		
Risk Management and Insurance (p. 118)		
Total Hours		30

Specializations

Commodities

Code	Title	Hours
Required Courses		
CMDT 6802	Foundations of Commodities	3
Other Courses		
Select 3 of the following:		9
CMDT 6490	Commodity and Equity Trading	
CMDT 6582	Commodity Supply Chain Management	
CMDT 6682	Commodity Valuation and Investment	
CMDT 6782	Commodity Data Analysis	
RISK 6129	Practical Enterprise Risk Management	
RISK 6309	Strategic Risk Management	
RISK 6509	Global Risk Management	
RISK 6809	Principles of Risk Management & Insurance	
RISK 6909	Corporate Risk Management	
Total Hours		12

Economics

Code	Title	Hours
Core		
BUSN 6640	Financial Management	3
FNCE 6330	Investment Management Analysis	3
FNCE 6382	Survey of Financial Derivatives	3
Electives		
Select any two FNCE/RISK/CMDT courses numbered 6000 or higher ¹		6
Economics Core		
ECON 5073	Microeconomic Theory	3
ECON 5083	Macroeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
Quantitative Elective		
Select one of the following:		3
ECON 5823	Econometrics II	
ECON 6801	Advanced Mathematical Economics	
MATH 5351	Actuarial Models	
MATH 5390	Game Theory	

MATH 5792	Probabilistic Modeling	
Total Hours		30

¹ excluding FNCE 6290 Quantitative Methods for Finance and
FNCE 6300 Macroeconomics and Financial Markets

The Economics Specialization is a stand alone program which requires 30 credit hours

Finance

Code	Title	Hours
Required Courses		
Select at least 3 courses with FNCE/CMDT/RISK prefix, numbered 6000 or higher.		9
Electives		
Select one of the following:		3
FNCE/CMDT/RISK course numbered 6000 or higher		
ACCT 6140	Fundamentals of Federal Income Tax	
ACCT 6340	Financial Statement Analysis	
ENTP 6824	Entrepreneurial Financial Management	
ECON 5813	Econometrics I	
ECON 5823	Econometrics II	
MATH 5792	Probabilistic Modeling	
MATH 5390	Game Theory	
Total Hours		12

Financial Analysis and Management

Code	Title	Hours
Select three or four courses of the following:		9-12
FNCE 6310	Financial Decisions and Policies	
FNCE 6340	Business Firm Valuation	
FNCE 6360	Management of Financial Institutions	
FNCE 6411	International Corporate Governance	
FNCE 6420	Mergers and Acquisitions	
FNCE 6450	Short-Term Financial Management	
FNCE 6460	Emerging Market Finance	
FNCE 6480	Financial Modeling	
Total Hours		9-12

If 3 courses completed from list above, select 1 course from the list below:

Code	Title	Hours
ACCT 6140	Fundamentals of Federal Income Tax	3
ACCT 6340	Financial Statement Analysis	3
CMDT 6582	Commodity Supply Chain Management	3
CMDT 6682	Commodity Valuation and Investment	3
CMDT 6802	Foundations of Commodities	3
ENTP 6824	Entrepreneurial Financial Management	3
MATH 5390	Game Theory	3
RISK 6129	Practical Enterprise Risk Management	3
RISK 6509	Global Risk Management	3
RISK 6809	Principles of Risk Management & Insurance	3

RISK 6909	Corporate Risk Management	3
CMDT 6782	Commodity Data Analysis	3

Risk Management and Insurance (RMI)

Code	Title	Hours
Required Courses		
RISK 6809	Principles of Risk Management & Insurance	3
RISK 6909	Corporate Risk Management	3
Required Course		
Select one of the following:		3
RISK 6129	Practical Enterprise Risk Management	
RISK 6309	Strategic Risk Management	
Quantitative Elective		
Select one of the following:		3
RISK 6209	Cyber Risk Management	
RISK 6509	Global Risk Management	
RISK 6709	Life and Health Insurance	
CMDT 6582	Commodity Supply Chain Management	
CMDT 6802	Foundations of Commodities	
CMDT 6682	Commodity Valuation and Investment	
CMDT 6782	Commodity Data Analysis	
ECON 5823	Econometrics II	
ENTP 6824	Entrepreneurial Financial Management	
FNCE 6340	Business Firm Valuation	
FNCE 6360	Management of Financial Institutions	
FNCE 6411	International Corporate Governance	
FNCE 6420	Mergers and Acquisitions	
FNCE 6480	Financial Modeling	
MATH 5792	Probabilistic Modeling	
Total Hours		12

There may be additional prerequisite courses for the ECON and/or MATH selections. Please check with those departments or the graduate advisors.

Total 30 credit hours

Finance/Economics, MS/MA

Introduction

Students may concurrently pursue an MA in Economics offered by the College of Liberal Arts and Sciences and the MS in Finance offered by the Business School. Students must complete 30 semester hours of a combination core, 9 semester hours of combination electives and 3 semester hours of a 5000- or 6000-level economics elective. Students apply to each program separately and admission into one of the programs does not guarantee admissions into the second program.

Global Energy Management, MS

Program Advisor: Michele Cooper

Telephone: 303-315-8066

E-mail: michele.cooper@ucdenver.edu

Faculty

Professors/Instructors

John Burkholder, MSSM
 Andy Bertsch, D.B.A.
 Jenny Bredt, MS
 Ralph Cantafio, J.D., MS
 Janie M. Chermak, Ph.D.
 Jill Engel-Cox, Ph.D.
 Jamie Ferguson, M.S.
 Chris Hansen, Ph.D.
 Gary Hapken, CPA, MBA
 Maen M. Husein, Ph.D.
 Jack Mason, Ph.D.
 Brent Mattson, Ph.D.
 Michael J. Orlando, Ph.D.
 Johanna Schmidtke, Ph.D.
 Steven Seay, Ph.D.
 Melissa Wood, MBA

Introduction

The master of science in global energy management (GEM) prepares individuals for leadership careers in the energy industry. This degree is particularly appropriate for individuals seeking to advance their existing careers in the energy field. Prior work experience within the field is preferred, but not required.

The program consists of two components: the core curriculum and the more advanced and specialized elective courses. The MS GEM program requires the completion of the following core classes as well as four elective courses from the selection listed below.

Code	Title	Hours
Required Courses		
GEMM 6000	21st Century Global Energy Issues and Realities	3
GEMM 6100	Global Energy Economics	3
GEMM 6200	Environmental, Regulatory, Legal & Political Environment in the Energy Industry	3
GEMM 6300	Technical Aspects of Energy Science	3
GEMM 6400	Leadership and Decision Making in the Global Energy Environment	3
GEMM 6410	People Management in the Global Energy Environment	3
GEMM 6450	Strategic Management of the Energy Industry	3
GEMM 6500	Energy Accounting in the Global Markets	3
GEMM 6600	Introduction To Financial Management In The Energy Industry	3
Other Courses		
Select three of the following: ¹		9
GEMM 6210	Energy and the Law: Property and Contracts	
GEMM 6230	Political Risk Management for Global Energy Environmen	
GEMM 6430	Organizational Behavior in the Energy Industry	
GEMM 6470	Energy Marketing and Communications	
GEMM 6610	Advanced Financial Management in the Energy Industry	
GEMM 6620	Energy Asset & Production Management for the Energy Industry	

GEMM 6630 Commercialization Management of Renewable Energies

Total Hours 36

¹ These courses are taken during the last two terms of the program and are offered based on enrollment.

Notes and Restrictions

The program is a cohort group, hybrid online, 18-month master of science degree program. As a cohort program, all students start together, progress together and graduate together. It is not recommended for students to take time out of the program once it starts, and students should plan on remaining in the program for the full 18 months. If it becomes necessary to take a term off, students need to contact the program advisor to discuss options. As a hybrid online program, professors and students meet in class face to face for four days (Fridays through Mondays) at the start of each 3-month term with the rest of the term completed online. Please note that the GEM degree program runs on a completely separate schedule from the normal semester terms of the Business School. Please check the Business School Website (<https://business.ucdenver.edu/>) for deadlines and dates of each GEM term. All GEMM courses are restricted to those students who have been admitted to the MS GEM program.

Dual Degrees

In order to participate in the dual degree options offered by the Business School, students in the GEM program must first complete their entire GEM degree before they can begin their second degree.

Information Systems, MS

Program Director: Dawn Gregg

Telephone: 303-315-8045

E-mail: Dawn.Gregg@ucdenver.edu

Introduction

The Master of Science in Information Systems (MSIS) program at the Business School is a 30 semester credit hour STEM (Science, Technology, Engineering, Mathematics) degree program that provides students the fundamental knowledge necessary for a career as an IS professional. The MSIS program layers managerial training with technical concepts to help you become a leader in your chosen career path in information technology. You can choose between industry leading specializations in Business Intelligence or Cybersecurity and Information Assurance or customize your own degree to allow you to focus on topics most relevant to your interests. With hands-on software projects, each class will take you one step closer to understanding how to harness the power of technology for business.

Five core courses serve as the foundation for understanding the complex issues that occur when designing, implementing and managing information systems within an organization. Students choose five elective courses which can correspond to a declared specialization or may reflect a custom course of study.

The MSIS includes a 4+1 program that allows our current undergraduate information systems students to pursue the Master of Science degree if they achieve a cumulative GPA of 3.00 or higher without taking the GMAT test. Students are also allowed to replace two undergraduate required information systems courses with two graduate information

systems courses. Interested students, please contact the Business School (p. 60) advising team for more information.

Program Requirements

Code	Title	Hours
Core Courses		
<i>Required Courses</i>		
ISMG 6080	Database Management Systems	3
ISMG 6180	Information Systems Strategy	3
ISMG 6430	Information Systems Security and Privacy	3
Select two of the following:		6
ISMG 6060	Analysis, Modeling and Design	
ISMG 6220	Business Intelligence Systems and Analytics ¹	
ISMG 6450	IT Project Management	
ISMG 6830	IT Governance and Service Management	
ISMG 6020	Programming Fundamentals with Python ²	
ISMG 6120	Network Design and Analysis ²	
<i>Elective Courses</i>		
Select 15 credits of the following:		15
Business Intelligence (p. 120)		
Cybersecurity and Information Assurance (p. 120)		
A customized degree using any course numbered 6000 or higher with an ISMG prefix ³		
Total Hours		30

¹ This course is required for the Business Intelligence Specialization.

² Both of these courses are required for the Cybersecurity and Information Assurance Specialization.

³ May include core classes not used to satisfy the Core MS IS requirement. In addition, selected 6000 level Business School courses, CVEN, or CSCI courses may be used to satisfy up to 6 elective credits for a customized degree.

Information Systems Specializations

Students may select from the following two specializations:

Business Intelligence

Business Intelligence (BI) systems combine operational data with analytical tools to present complex and competitive information to planners and decision makers. The objective is to improve the timeliness and quality of inputs to the decision process. BI is used to understand the capabilities available in the firm; the state-of-the-art, trends, and future directions in the markets, the technologies, and the regulatory environment in which the firm competes; and the actions of competitors and the implications of these actions. With this specialization, you get the necessary skills and knowledge in real-time data warehousing, data visualization, data mining, online analytical processing, customer relationships management, dashboards and scorecards, corporate performance management, expert and advanced intelligent systems, and hands-on experience with leading BI tools.

Code	Title	Hours
Required Courses		
Select four of the following:		12
ISMG 6470	Text Data Analytics	

ISMG 6480	Data Warehouse and Administration
ISMG 6810	Business Intelligence in Healthcare
ISMG 6820	Business Intelligence and Financial Modeling
BUSN 6530	Data Analytics for Managers ¹

Free Elective

Any course numbered 6000 or higher with an ISMG prefix, any 6000-level Business School, CSCI or CVEN course may be used to satisfy the free elective. 3

Total Hours 15

¹ Students may substitute BANA 6610 for BUSN 6530 with permission of the Business Analytics program.

Students must complete the following MS IS core course:

- ISMG 6220 Business Intelligence Systems and Analytics

Cybersecurity and Information Assurance

With recent breaches in the security of many large government agencies and private corporations, cybersecurity is an issue of great importance to the global society. The Cybersecurity and Information Assurance Specialization prepares students for cybersecurity, information security, and IT risk management positions in business and critical infrastructure sectors of the economy identified by the U.S. Department of Homeland Security including enterprises such as banks, governments, retail, health care institutions, law enforcement, construction, insurance agencies, transportation and the military.

Code	Title	Hours
Required Courses		
ISMG 6340	Cloud Computing Concepts, Tools, and Security	3
ISMG 6860	Ethical Hacking Concepts and Methodologies	3
ISMG 6890	IT Risk Management	3
ISMG 6865	Digital Forensic Analysis	3
ISMG 6910	Design Science Practicum ¹	3
Total Hours		15

¹ Or an approved Internship with required paper and presentation to be completed during the final 9 credit hours of the program.

Students must complete the following MS IS core courses:

Code	Title	Hours
ISMG 6020	Programming Fundamentals with Python	3
ISMG 6120	Network Design and Analysis	3

Customized Degree

Students may choose to customize their degree by taking five ISMG graduate courses and related graduate technology courses from across the Business School, Computer Science, or GIS programs. Must see an advisor to create.

International Business, MS

Program Director: Manuel G. Serapio, Jr.

Telephone: 303-315-8888

E-mail: Manuel.Serapio@ucdenver.edu

Introduction

The MS in International Business Program prepares students to lead in and contribute to a dynamic digital global economy. The program provides students the knowledge, critical thinking, and skills to identify, create, and seize international business opportunities, and to address the challenges and risks of doing business in a global economy.

The program offers multiple opportunities for immersive learning, such as live case studies, international consulting projects, internships, and study abroad trips. Each student is assigned a Faculty Advisor and an International Business Mentor.

The University of Colorado Denver is the only Colorado university, and one of just 15 universities nationwide, granted the U.S. Department of Education's prestigious designation as a Center for International Business Education Research (http://www.ucdenver.edu/academics/internationalprograms/CIBER/Pages/IIB_CIBER.aspx) (CIBER), an honor earned in large part through the excellence of the international business program.

Program Requirements

The MS program in International Business requires the completion of the following:

Business Prerequisites

Advisors will evaluate transcripts for possible prerequisite waivers.

Students who choose to take classes for the degree that require prerequisites not previously met, may be required to take additional courses. Completion of prerequisite courses is in addition to the 30-hour MS in International Business degree. One BUSN prerequisite may be counted as a Free Elective. Meeting prerequisites is the responsibility of the student.

Code	Title	Hours
A. International Business Core I		
INTB 6000	Introduction to International Business	3
or ENTP 6826	International Entrepreneurship	
B. International Business Core II		
Select four of the following:		12
ENTP 6826	International Entrepreneurship	
INTB 6022	International Business Negotiations	
INTB 6026	Marketing Challenges at the Global Frontier	
INTB 6370	International Accounting	
INTB 6372	International Financial Management	
INTB 6500	International Business Consulting ¹	
INTB 6800	Special Topics in International Business ²	
C. International Immersion Experience		
Select one of the following:		3
INTB 5939	Internship ³	
INTB 6028	Global Study Topics ⁴	
INTB 6500	International Business Consulting ^{1,5}	
D. International Specialization Electives		
Select one of the following:		9
Digital Globalization (p. 121)		
Global Supply Chain (p. 121)		

Global Cross Cultural Studies (p. 122)

E. Free Elective	
Complete any graduate business course numbered 6000 or higher with a prefix of ACCT, BANA, BUSN, CMDT, ENTP, FNCE, INTB, ISMG, MGMT, MKTG, MTAX, or RISK ⁶	3
Total Hours	30
¹ This course is repeatable up to two times with different projects.	
² INTB 6800 Special Topics not applied towards specialization may be counted/applied in International Business Core II.	
³ Work with the Institute for International Business (IIB) or Experiential Learning Center (ELC) on internship opportunities.	
⁴ Additional INTB 6028: Global Study Topics not applied towards specialization may count towards the International Immersion experience.	
⁵ Students pursuing the Global Cross-Cultural Studies Specialization (Option 1) must complete INTB 6500 International Business Consulting because study abroad coursework is already completed as part of the specialization.	
⁶ Some of these courses may have prerequisites of a BUSN course that may not be listed on your degree plan. Check with an academic advisor to see if it is possible to waive the prerequisite based on previous coursework. Students who require additional BUSN courses as prerequisites may count one BUSN prerequisite course as a free elective.	

Specializations

Students may pursue up to two specializations. One applicable course from 1st specialization may count towards the 2nd specialization.

Digital Globalization

Code	Title	Hours
Select three of the following:		9
ENTP 6022	Digital Strategy for Entrepreneurs	
ENTP 6826	International Entrepreneurship ¹	
INTB 5939	Internship (petition and approval needed)	
INTB 6024	International Trade Finance and Management	
INTB 6028	Global Study Topics (Focus area: E-Commerce)	
INTB 6500	International Business Consulting ²	
INTB 6600	Blockchain and Emerging Technologies Impact Globalization	
INTB 6800	Special Topics in International Business ³	
ISMG 6430	Information Systems Security and Privacy	
Total Hours		9

- ¹ If not taken to fulfill a core requirement.
- ² This course is repeatable up to two times with different projects.
- ³ INTB 6800 Special Topics in International Business course titled Global Payments in Cross-Border E-Commerce is acceptable for this specialization. Additional INTB 6800 Special Topics courses may be developed and offered that could count towards the specialization.

Global Supply Chain

Code	Title	Hours
Select three of the following:		9
INTB 6730	Supply Chain Analytics	

INTB 6024	International Trade Finance and Management
INTB 6500	International Business Consulting ¹
INTB 6600	Blockchain and Emerging Technologies Impact Globalization
INTB 6800	Special Topics in International Business ²
INTB 5939	Internship (petition and approval needed)
INTB 6028	Global Study Topics (Focus area: Global Supply Chain)

Total Hours 9

¹ This course may be repeatable up to two times with different projects.

² The following INTB 6800 Special Topics in International Business courses are acceptable for this specialization:

- Global Payments in Cross-Border E-Commerce
- Global Supply Chain, Logistics, and Transportation

Additional INTB 6800 Special Topics courses may be developed and offered that could count towards the specialization.

Global Cross Cultural Studies

Code	Title	Hours
Select either Option 1, Option 2, or Option 3		

Option 1: Approved 9 semester credit abroad program (Work with the International Business Program Director for opportunities)

Option 2: Complete three of the following courses:

INTB 6022	International Business Negotiations	3
INTB 6060	The Legal Aspects of International Business	3
INTB 6028	Global Study Topics (Focus Area: Country/Region Focused Travel Study)	3
INTB 6500	International Business Consulting	3
INTB 6800	Special Topics in International Business (Global Payments in Cross-Border E-Commerce and/or Global Music Cities) ¹	3
INTB 6870	Global Climate Change	3

Option 3: Complete 9-credit language and culture course

¹ Additional INTB 6800 Special Topics courses may be developed and offered that could count towards the specialization.

Total 30 hours (plus any needed prerequisites)

A course may not be counted in multiple spaces on the degree plan.

Management and Organization, MS

Program Director: Kenneth Bettenhausen, Jeffrey Nystrom

Telephone: 303-315-8425, 303-315-8407

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Jeffrey.Nystrom@ucdenver.edu

Introduction

The MS Management program prepares students for significant managerial responsibilities in the private and public sectors. Core course requirements provide students with an advanced understanding of how to manage interpersonal dynamics, effectively design organizations, implement planned change and organizational transformations, and develop human resources. Students build on this foundation with any

four electives in MGMT, or with the courses that comprise one of the career-focused specializations.

The specializations include: business strategy and innovation, leadership and change management, managing for sustainability, and a self-directed option.

Course Requirements

The MS management and organization degree requirements are met by the following:

Code	Title	Hours
Required Core Courses		
BUSN 6520	Leading Individuals and Teams	3
MGMT 6320	Leading Organizational Change	3
MGMT 6360	Designing Effective Organizations	3
MGMT 6380	Managing People for Competitive Advantage	3
Specialization Options		
Select one of the following:		18
	Business Strategy and Innovation (p. 122)	
	Leadership and Change Management (p. 122)	
	Managing for Sustainability (p. 123)	
	Self-Directed (p. 123)	
Total Hours		30

Specialization Options

Business Strategy and Innovation

Code	Title	Hours
Select three of the following:		
MGMT 6610	Business Strategy Lab	
	or MGMT 68 Sustainable Change Leadership: Turning Business Into a Force for Good	
MGMT 6620	Strategic Management (new course beginning fall 2020)	
MGMT 6804	Negotiation and Conflict Management.	
ENTP 6020	Business Model Development & Planning	
	or ENTP 6620 New Venture Operations and Project Management	
INTB 6000	Introduction to International Business	
Select any 3 courses numbered 6000 or higher with a prefix of MGMT.		9
Total Hours		18

Leadership and Change Management

Code	Title	Hours
Select three of the following:		
MGMT 6803	Visionary Leadership	
MGMT 6804	Negotiation and Conflict Management.	
MGMT 6822	Business Ethics and Corporate Social Responsibility	
MGMT 6610	Business Strategy Lab	
	or MGMT 68 Sustainable Change Leadership: Turning Business Into a Force for Good	
Select any 3 courses numbered 6000 or higher with a prefix of MGMT.		9
Total Hours		18

Managing for Sustainability

Code	Title	Hours
Select three of the following:		
MGMT 6821	Managing for Sustainability	9
MGMT 6822	Business Ethics and Corporate Social Responsibility	
MGMT 6825	Sustainable Change Leadership: Turning Business Into a Force for Good	
MGMT 6826	Business for a Better World	
MGMT 6827	Global Climate Change	
Select any 3 courses numbered 6000 or higher with a prefix of MGMT.		9
Total Hours		18

Self-Directed

If students do not wish to pursue a specific specialization within the Management degree, they may self-direct their course selections by choosing 18 hours (6 courses) from courses numbered 6000 or higher with a prefix of MGMT.

Marketing, MS

Program Director: Vicki Lane

Telephone: 303-315-8468

E-mail: Vicki.Lane@ucdenver.edu

Introduction

The MS in Marketing degree is designed to provide the skill sets necessary for you to succeed in Marketing Management careers. These positions include upper-level positions (e.g., Chief Marketing Officer), middle-level positions (e.g., Brand Manager, Advertising Account Executive) and positions for those who interface with an organization's markets (e.g., Marketing Analysts). Your MS in Marketing degree from the University of Colorado Denver consists of 10 courses as follows:

- Common Core - 7 courses (21 semester hours)
- Elective/Specialization Option - 3 courses (9 semester hours)

Everyone completes the same 7 common core courses and then can choose either three marketing electives with a MKTG prefix or a Specialization option that consists of 3 courses. For the Specialization, you can choose from four "Signature" Specializations, three Cross-Over Specializations, or customize your program with three graduate marketing (MKTG) courses of your choice.

Course Requirements

Code	Title	Hours
Required Core Courses		
BUSN 6560	Marketing Dynamics in the 21st Century	3
MKTG 6010	Marketing Strategy	3
MKTG 6020	Marketing Challenges at the Global Frontier	3
MKTG 6040	Services Marketing for Traditional and Creative Industries	3
MKTG 6050	Market Research Analytics I	3
MKTG 6060	Consumer Intelligence—Psychology and Behavior	3
MKTG 6200	CRM, Big Data, and Marketing Metrics	3

Marketing Electives or Specialization

Students may select any course numbered 6000 or higher with a MKTG prefix or students may choose from the following marketing specializations:	9
Advanced Market Analytics in a Big Data World (p. 123)	
Brand Communication in the Digital Era (p. 123)	
Global Marketing (p. 124)	
High-Tech/Entrepreneurial Marketing (p. 124)	
Marketing and Global Sustainability (p. 124)	
Marketing Intelligence and Strategy in the 21st Century (p. 124)	
Sports and Entertainment Business (p. 125)	
Total Hours	30

Specializations

The specializations are areas of focus that will appeal to those who have specific interests or are looking to apply their marketing acumen in particular contexts (e.g., interface with engineering or work in a multinational or nonprofit environment).

The *Signature Specializations* include: Advanced Market Analytics in a Big Data World; Brand Communication in the Digital Era, Marketing Intelligence and Strategy in the 21st Century; and Sports and Entertainment Business (see special degree requirements).

The *Cross-Over Specializations* include: Global Marketing; High-Tech Entrepreneurial Marketing; and Marketing and Global Sustainability.

Courses required for each of the specializations are listed with the specific specializations below:

Advanced Market Analytics in a Big Data World

Marketing and survey researchers gather information about what people think, measure customer satisfaction and repurchase intentions, help companies decide what goods and services to offer and at what price, and detect up-and-coming trends. Marketing researchers need good quantitative skills, strong analytical skills and a good understanding of marketing and buyer behavior. Many of our alumni got their starts in marketing research positions. According to the U.S. Bureau of Labor Statistics, employment is expected to grow faster than average with the best job opportunities for those with an MS marketing degree (Don't just take our word for it; check out <http://www.bls.gov/oco/ocos013.htm>).

Code	Title	Hours
MKTG 6090	Big Data Customer Relationship Management	3
MKTG 6051	Market Research Analytics II	3
Complete any one MKTG 6000 or higher course.		3
Total Hours		9

Brand Communication in the Digital Era

Are you interested in a career in advertising, promotions or public relations? How about furthering your career in marketing management? Advertising, promotion and public relations managers are creative, highly-motivated individuals who are flexible yet can meet a deadline. They need good verbal and written communication skills and the ability to work well with people. Similar talents are needed by those involved with brand management. This task is central to all marketers, especially those involved with perceptual positioning and the deliverance of positions in a target market (e.g., those working in any phase of market communication and R&D) The U.S. Bureau of Labor Statistics reports that, because of the high visibility of these positions, these managers are often prime

candidates for top C-level positions. The job outlook remains promising but competition will be keen, and the best opportunities will go to those with an MS in marketing or an MS marketing /MBA dual degree. (Don't take our word for it, see <http://www.bls.gov/oco/ocos020.htm>).

Code	Title	Hours
Required		
MKTG 6070	Brand Identity & Marketing Communication Strategy	3
MKTG 6092	Digital Media Marketing - Tools and Analytics	3
Complete one MKTG 6000 or higher course.		3
Total Hours		9

Global Marketing

One of the growing themes of the 21st century economy is the growth of world trade. There is continuing demand for individuals who understand the how to conduct marketing across many different international environments as well as rapidly growing areas such as China and the emerging markets. This specialization prepares you to effectively compete and succeed in this environment.

Code	Title	Hours
Required Course		
ENTP 6826	International Entrepreneurship	3
Other Courses		
INTB 6020	Cross-Cultural Management	3
or MKTG 6830	Marketing & Global Sustainability	3
Complete either one MKTG 6000 or higher course, one INTB 6000 or higher course, or one ENTP 6000 or higher course with a global focus.		3
Total Hours		9

High-Tech/Entrepreneurial Marketing

The American economy was built on a spirit of innovation, hard work and entrepreneurship, and this is surely going to be the path that assures continued American dominance in the technology and business development fields. Most smart innovators know that, in addition to the financial and managerial aspects of a business, it is the marketing function that often makes the difference between success and failure. Whether your interest is in corporate intrapreneurship and the development of high-technology oriented innovations or individual entrepreneurship and the development of a small business with minimal funds, knowing how to create and implement appropriate marketing strategies is fundamental to achieving your goals. This specialization allows you to focus on the type of new business creation path that best suits your aspirations while greatly enhancing your endeavors probability of success. If you aspire to be the next Bill Gates, this is a "must take" degree path for you.

Code	Title	Hours
Required		
ENTP 6842	New Concept Development	3
Other Courses		
Select one of the following:		3
ENTP 6020	Business Model Development & Planning	
ENTP 6620	New Venture Operations and Project Management	
ENTP 6644	Impactful Social Innovation	
ENTP 6801	Building Biotechnology	

ENTP 6822	Legal and Ethical Issues of Entrepreneurship	
ENTP 6826	International Entrepreneurship	
Complete one MKTG 6000 or higher course.		3
Total Hours		9

Marketing and Global Sustainability

The world has changed. More than ever, companies around the globe need to introduce smart, sustainable brands to lead the way into the future. The strong core of MS marketing courses will give you the skills to become an effective marketing manager, while the specialized set of sustainability courses will give you the knowledge to work toward a better tomorrow. The sustainability courses will focus on the triad of economic, environmental and social sustainable development.

Code	Title	Hours
Required		
MKTG 6830	Marketing & Global Sustainability	3
Other Courses		
Select one of the following:		3
MGMT 6821	Managing for Sustainability	
MGMT 6822	Business Ethics and Corporate Social Responsibility	
MGMT 6826	Business for a Better World	
MGMT 6827	Global Climate Change	
Total Hours		6

Marketing Intelligence and Strategy in the 21st Century

According to the Bureau of Labor, in 2015 the median salary for Marketing, Advertising, and Promotions Managers was \$124,850. This Specialization is designed to prepare students for these careers across various industries, whether services, products, global, or domestic. It provides a balance across strategy and intelligence. Skills, interests, and capabilities that are relevant include the following:

- Savvy in cultivating and maintaining business relationships
- Capacity to communicate effectively
- Interested in understanding how consumer psychology affects market success
- Fascinated with popular culture and its creation of market opportunities
- Captivated by the integration of branding with media, entertainment, and sports
- Intrigued by the "Internet of things" and how this is changing the relationships between organizations and consumers
- Focused on Creative approaches to business challenges
- Ability to think "out-of-the-box" and generate new ideas to solve market problems
- Knack for planning and organization
- Skill in managing people and resources

Code	Title	Hours
Required Courses		
MKTG 6070	Brand Identity & Marketing Communication Strategy	3
MKTG 6090	Big Data Customer Relationship Management	3
Other Course		
Complete one MKTG 6000 or higher course.		3
Total Hours		9

Sports and Entertainment Business

The sports business industry is one of the largest and fastest growing in the United States. Add to that the burgeoning music, film, theater, television, cable and other entertainment industries and you've got virtually limitless choices. Every one of those industries needs good marketers. The strong core of marketing courses in the MS marketing program will give you the skills you need to hit the ground running with the specialized courses to teach you how to tailor your skills to the unique needs of the sports and entertainment industries.

If you pursue this specialization you must follow the course requirements listed below as this specialization has a unique degree plan.

Business Applications in Sports and Entertainment

Code	Title	Hours
Required Course		
MKTG 6820	Sports & Entertainment Marketing	3
Select four of the following:		12
MKTG 5939	Internship	
MKTG 6040	Services Marketing for Traditional and Creative Industries	
MKTG 6822	"Fan"tastical Consumers of American Sports and Entertainment	
MKTG 6824	Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries	
MKTG 6826	The Sports and Entertainment Industry	
MKTG 6834	Global Sports & Entertainment Management	
Total Hours		15

Business Skills for Sports and Entertainment Managers

Code	Title	Hours
Required Course		
BUSN 6560	Marketing Dynamics in the 21st Century	3
Other Courses		
Select three of the following:		9
MKTG 6010	Marketing Strategy	
MKTG 6050	Market Research Analytics I	
MKTG 6060	Consumer Intelligence—Psychology and Behavior	
MKTG 6070	Brand Identity & Marketing Communication Strategy	
MKTG 6090	Big Data Customer Relationship Management	
MKTG 6092	Digital Media Marketing - Tools and Analytics	
MKTG 6200	CRM, Big Data, and Marketing Metrics	
MKTG 6800	Topics in Marketing	

Marketing Elective

Complete one MKTG 6000 or higher course.	3
Total Hours	15

Master in Business Administration for Executives, MBA

Program Director: Roger Japp

Telephone: 303-315-8015

Email: roger.japp@ucdenver.edu

Introduction

The Executive MBA provides executive-level students with a broad, rigorous 16-month academic program leading to the Master of Business Administration degree. The program is designed for persons who hold decision-making positions in private and public sector organizations. The program builds upon the knowledge and experience of these professionals with challenging curriculum and experiences that can be pursued without career interruption.

The Executive MBA program emphasizes strategic leadership and quantitative analysis; and the latest in applied models and tools of management. Courses are taught through a variety of methods and content including case studies and projects, lectures, guest speakers from industry, etc.

The Executive MBA program has two alternative start dates in January and August. Classes meet one weekend a month, on a Friday and Saturday, accommodating demanding work schedules and also making it possible for those who live outside the Denver area to participate in the program. Additional required course activities are delivered in synchronous and asynchronous online modalities.

Two courses are taken each eight-week term. At the end of the first-year students travel abroad for an international business course.

MBA/MS in Bioengineering

Introduction

The Business School and the Department of Bioengineering offer this degree option for students admitted into the Bioengineering MS program and the MBA program. This dual degree is an excellent opportunity for students who are planning a career in industry or as an entrepreneur. Bioengineering students including those who create medical devices, often launch their own venture upon graduation or thereafter. Business skills (especially in the areas of marketing, legal environments, and/or finance and operations) are critical to enhance the probability of venture success. A dual degree also opens up new doors with regard to career choice, either in business or in one's core field.

Taxation, MS

Program Director: Katherine Gunny

Telephone: 303-315-8431

E-mail: Katherine.Gunny@ucdenver.edu

Introduction

The world of tax is constantly changing. Globalization and increased competition, both domestically and internationally, have created a situation where tax law is helping to shape social, political, economic, and business policies and agendas. Because of this constant change, the

demand for tax professionals potentially may grow by more than 20% in the next decade. To meet market demand for tax professionals, the MS in Taxation degree program gives students the tax skills and knowledge they need to succeed in this dynamic and intriguing career field.

We offer a 4+1 program that allows our current undergraduate accounting students to pursue the master of science degree, if they achieve a cumulative GPA of 3.00 or higher in the Intermediate series (ACCT 3220 Intermediate Financial Accounting I, ACCT 3230 Intermediate Financial Accounting II, and ACCT 3320 Intermediate Cost Accounting), without taking the GMAT test. Students are also allowed to replace two undergraduate required accounting courses with two graduate accounting courses. Interested students, please contact the Business School advising team.

The MS in Taxation degree consists of 30-semester hours + 9 hours of prerequisites that may be waived based on prior coursework.

Program Requirements

Tax Prerequisites: (9 semester hours)

The MS in Taxation requires completion of the following accounting prerequisites.

Required Prerequisite Courses (advisor will evaluate transcript for possible waivers, grades must be a C or better to be considered for possible waiver):

Code	Title	Hours
ACCT 6031	Intermediate Financial Accounting I ¹	3
ACCT 6032	Intermediate Financial Accounting II ²	3
ACCT 6140	Fundamentals of Federal Income Tax ³	3
Total Hours		9

¹ Equivalent undergrad course: ACCT 3220 Intermediate Financial Accounting I

² Equivalent undergrad course: ACCT 3230 Intermediate Financial Accounting II

³ Equivalent undergrad course: ACCT 4410 Fundamentals of Federal Income Tax

Course Requirements

Code	Title	Hours
Tax Core		
ACCT 6020	Auditing Theory	3
ACCT 6054	Accounting Information Systems	3
ACCT 6150	Taxation of Business Entities	3
ACCT 6280	Accounting Ethics	3
ACCT 6400	Taxation of C Corporations and Shareholders	3
ACCT 6410	Advanced Tax for Individuals	3
ACCT 6450	Tax Research	3
ACCT 6480	Partnership Taxation	3
Tax Electives		
Select two of the following:		6
Any ACCT 6000 level course or higher		
ACCT 6024	Advanced Financial Accounting	
ACCT 6080	Accounting for Government and Nonprofit Organizations	
ACCT 6250	Seminar: Financial Accounting	

ACCT 6260	Seminar: Managerial Accounting
ACCT 6330	Fraud Auditing
ACCT 6340	Financial Statement Analysis
ACCT 6370	International Accounting
ACCT 6520	Issues in Oil and Gas Accounting
ACCT 6620	Seminar: Auditing and Other Assurance Services
ACCT 5939	Internship

Total Hours 30

Students may not receive graduate credit for undergraduate coursework and may not retake any course successfully completed at the undergraduate level with a grade of "C" or better. An advisor will evaluate prior coursework to determine possible substitutions.

Bioinnovation and Entrepreneurship Certificate

Introduction

The Business Schools graduate certificates are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate **does** count towards your graduate business degree, should you choose to pursue a degree here. One such certificate is our Bioinnovation and Entrepreneurship Certificate.

Bioinnovation and Entrepreneurship Certificate

The Certificate in Bioinnovation and Entrepreneurship is one-of-a-kind, and is geared to helping bioentrepreneurs achieve commercial success. Students have opportunities to participate in a number of Jake Jobs Center programs; including the annual business plan competition, internships in area businesses, speaker programs with local entrepreneurs, and connection with new ventures. Visit the Jake Jobs Center for Entrepreneurship to learn more about our entrepreneurship programs.

Commodities Certificate

Introduction

The J.P. Morgan Center for Commodities at the AACSB accredited CU Denver Business School provides a certificate in Commodities designed to introduce students to the fundamentals of commodities, from physical to financial. The Commodities certificate consists of four courses to prepare students to work in an environment in which Commodities are a major function in business operations.

Coursework will integrate industry operating procedures and standards, including regulations and compliance. Emphasis will be placed on markets, supply chain and forecasting supply/demand functions for the overall financial benefit of the company.

We recommend that students begin with Foundations of Commodities, taught by 3 commodity industry experts in the energy, mining and metals, and agriculture sectors. From there, students can select particular areas

of focus within the field of commodities to complete their remaining 3 classes.

Certificate Requirements

Code	Title	Hours
Select four of the following:		12
CMDT 6802	Foundations of Commodities	
CMDT 6582	Commodity Supply Chain Management	
CMDT 6682	Commodity Valuation and Investment	
CMDT 6782	Commodity Data Analysis	
CMDT 6490	Commodity and Equity Trading	
Total Hours		12

Please contact the Commodities Center for more information at Commodities.Center@ucdenver.edu.

Entrepreneurship Certificate

Introduction

The Business Schools undergraduate certificates are primarily intended for students currently pursuing a degree in any undergraduate discipline that want to expand their business knowledge to give themselves a leg up when they enter the work force. However, they can also be taken by students with only a high school diploma.

Students can pursue one of our undergraduate certificates, even if they are not CU Denver students. Credit earned as a part of the certificate **does** count towards your undergraduate degree, should you choose to pursue a degree here. One such undergraduate certificate is listed below:

Launchpad Entrepreneurship Certificate

This certificate can be earned in either downtown Denver at the Jake Jabs Center for Entrepreneurship or CU South Denver.

The Jake Jabs Center for Entrepreneurship is offering an affordable program in one of the fastest growing business segments in the country: Innovation and Entrepreneurship. All courses are taught by faculty from the Jake Jabs Center for Entrepreneurship at CU Denver. You will find many opportunities including scholarships, mentoring, and networking. You will gain skills that prepare you to start a successful business or become an entrepreneurial asset to an existing company.

Benefits:

- Experiential opportunities
- Condensed 8-Week courses
- Two convenient Denver locations
- Cost effective - Scholarships available
- No GPA requirements or prerequisites

The Business Schools also offers post-graduate certificates which are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate **does** count towards your graduate business degree, should

you choose to pursue a degree here. One of the post-graduate certificates is listed below:

A Certificate in Entrepreneurship gives students the ability to marshal resources to seize new business opportunities which have uncertain outcomes. The post-bachelors certificate introduces students to fundamental entrepreneurial concepts plus provides the flexibility to allow them to explore specialized areas of interest including cutting-edge social entrepreneurship, new venture design, finance structuring, legal issues, leadership, marketing and personal branding, new product development and business plan creation. Visit the Jake Jabs Center for Entrepreneurship to learn more about our entrepreneurship programs.

Graduate Certificate in Risk Management

Introduction

Broaden your knowledge of risk management by completing a one-year Graduate Certificate in Risk Management from the University of Colorado Denver. By completing four semester-long RMI courses, all available online, and meeting a prior finance course requirement, you will be on your way to enhancing your personal knowledge and providing your employer with RMI awareness and professional skills. Previous course work and some professional designations may waive the prerequisites.

The Risk Management and Insurance industry is actively seeking young talent and the RMI program has 100% job placement of our graduates at competitive salaries. 50% of this industry is retiring in the next 5 to 10 years, leaving a huge need for new talent. The pervasive reality of risk affects all individuals and organizations. Specialized knowledge and understanding of risk increase students' marketability and potential for success across a wide range of industries.

This certificate is for students currently pursuing a degree in any graduate discipline that wants to expand their business and knowledge of risk management to give themselves a leg up when they enter the workforce. Degree-seeking students are eligible to apply for RMI scholarships each semester they are enrolled in a certificate course. However, this certificate can also be taken by those that have completed their degree.

Students can pursue this certificate, even if they are not CU Denver students. Credit earned as a part of the certificate **does** count towards a full graduate MBA or master's degree.

Potential Career Opportunities in Risk Management:

• Underwriter • Broker • Risk Manager • Claims Adjustor • Risk Analyst • Account Executive • Loss Control • Agent

Add an RMI Certificate to your degree in:

• Business • Economics • Math • Actuarial Science • Criminal Justice • Information Technology • Engineering • Other Majors

See the Certificate in Risk Management (<https://business.ucdenver.edu/academics/professional-development/credit-certificates/risk-management-and-insurance-graduate/>) page for more information.

Program Delivery

- This certificate can be completed fully online or through a combination of on-campus and online classes in as little as one year.

Declaring This Certificate

See the Graduate Certificate in Risk Management page here (<https://business.ucdenver.edu/academics/professional-development/credit-certificates/risk-management-and-insurance-graduate/>) for more information. Current CU Denver students can contact their advisor to add this certificate to their major. Non-students can apply here (<https://business.ucdenver.edu/academics/professional-development/credit-certificates/risk-management-and-insurance-graduate/>) or contact lori.genuchi@ucdenver.edu for more information.

Post-Graduate Certificates Introduction

Post-Graduate certificates are offered in specialized business areas and are designed to update skillsets or explore a new area of business. Courses are tailored to the working professional with online and evening class options. Some post-graduate certificates require prior knowledge in the area being studied.

More details on Post-Graduate Certificates can be found here (https://business.ucdenver.edu/professional-development/credit-certificates/#post_graduate_certificates-1025). For questions, please contact an advisor.

Sustainability Certificate Introduction

The Business Schools graduate certificates are primarily intended to give individuals with an undergraduate degree in any discipline access to business courses that can help them succeed in their current job or even help them launch their own company.

Students can pursue one of our graduate certificates, even if they are not CU Denver students, without taking the GMAT. Credit earned as a part of the certificate **does** count towards your graduate business degree, should you choose to pursue a degree here. Listed below is information on one such certificate.

The Managing for Sustainability Certificate is designed for business professionals seeking a deeper understanding of sustainability and/or the technical knowledge to lead sustainability initiatives in their companies. To earn a Managing for Sustainability Certificate, students complete four semester-long graduate Business School courses. Two of the courses provide a foundation in sustainable business practices then, students select their remaining two certificate classes covering such specialized areas as finance, marketing, accounting, and social entrepreneurship. Contact a graduate advisor for more information, 303.315.8200.

College of Architecture and Planning Leadership

Dean

Nan Ellin, Dean for the College of Architecture and Planning (CAP)

Associate Deans

Jody Beck, Associate Dean of Academic Affairs

Contact

CU Denver Building

1250 14th Street, Suite 2000

Denver, CO 80202

Phone: 303-315-1000

Fax: 303-315-1050

Email: CAP@ucdenver.edu

Website: <https://architectureandplanning.ucdenver.edu/>

Mailing Address

Campus Box 126

P.O. Box 173364

Denver, CO 80217-3364

Overview

The College of Architecture and Planning offers the only accredited degrees in architecture, urban and regional planning, and landscape architecture in the State of Colorado as well as the only master's degrees in historic preservation and urban design, and the only doctoral degree in geography, planning, and design. The college offers a Bachelor of Science in Architecture degree and graduate programs for over 700 students. Programs are accredited by the Landscape Architectural Accreditation Board (LAAB), National Architectural Accrediting Board (NAAB) and Planning Accreditation Board (PAB). Many students intending to enter the design and planning professions complete the college's undergraduate degree as preparation for our graduate-level professional programs. Those who already hold an undergraduate degree in an unrelated field are also eligible for admission into our graduate programs. We offer graduate certificates in Design Build, Historic Preservation, Integrated Construction Management and Leadership (with Business and Engineering) and Geospatial Information Science, as well as ten options for earning dual graduate degrees. In addition, students can earn a certificate from the Institute of Classical Architecture and Art, by taking focused courses in this area. With an outstanding faculty committed to excellence in teaching, research, scholarship and creative work, the college provides students with opportunities beyond the classroom including study abroad, internships, mentorships, and participation in design and planning competitions. The College of Architecture and Planning ignites evolution that enriches places for people and the planet through learning by doing, practicing co-creation, and valuing the unique spark of each person as well as the full range of professional and historical traditions.

College Facilities

The college is located at 1250 14th Street in downtown Denver, on the northeastern edge of the Auraria Campus adjacent to Larimer Square. This favorable location gives easy access both to the extensive campus facilities and the urban dynamism of Denver's lively lower downtown. Most of the major professional design offices in Denver and many planning firms and agencies are nearby, offering many opportunities for contact between students and practitioners. College facilities include studio spaces for students, lecture and seminar rooms, design jury spaces, exhibition spaces and faculty offices. Students have access to our well-equipped and well-maintained 3,000-square-foot Design Fabrication Lab that houses a full-scale wood shop, 3D print lab, a large spray booth and four laser cutters. An annex adjacent to the building provides additional fabrication space, a 5-AXIS CNC Router, metalworking equipment and a CNC Plasma cutter. The Visual Resource Center (VRC) provides access to a variety of photographic and audiovisual equipment, two portfolio photography studio rooms, and digital image collections. There are two computer labs focused on computer aided design (CAD), computer 2-D and 3-D imaging and analytic tools for planning. These computer labs include Windows PCs and Macs, small and large format scanners, large format plotters, laser printers and computer data

projection devices. All systems are 100base T Ethernet / Internet savvy and accessible 24 hours a day in secure rooms. Find more details about college facilities on the website. Also associated with the college is a geographic information systems (GIS) computer laboratory, open to all CU Denver students.

Computing in the College

The College of Architecture and Planning requires all incoming graduate students to acquire and use their own computers and software applications in their studies. Neither the College nor the University endorses or requires you to buy a computer from a particular vendor or manufacturer. In general, students widely use products like Microsoft Office for word processing, e-mail, presentations and spreadsheet applications. Consult with instructors or view course syllabi regarding specific software application (program) requirements for imaging, CAD, GIS, modeling or rendering before you buy them. Software requirements for incoming students in all masters programs are per department recommendation, and otherwise stipulated by the course syllabus. For further information, consult the college website.

Graduate Programs

Learning Experiences

Learning experiences address real issues facing designers and planners as they create healthier, more sustainable, more meaningful environments. Through hands-on education, CAP students learn how to apply knowledge to real-world projects. The faculty and students are extensively engaged with Colorado communities, in service learning and applied research. Students have built award-winning solar-powered homes; discovered ecological design principles in Colorado ranches; helped re-envision the I-70 corridor through north Denver; proposed ways for communities to recover from natural disasters; and designed learning landscapes for all 96 Denver elementary school playgrounds. The award-winning Design Build program has developed projects as varied as micro cabins for the Colorado Outward Bound School, environmentally sustainable homes in the Navajo Nation, schools in Guatemala and Nicaragua, a performing arts stage for a mountain community, and outdoor classrooms for urban farming education and environmental groups.

Special Activities

The college provides a diverse range of opportunities that enrich and enhance the education of its students. Through activities and functions - including a lecture series, design juries, exhibitions, publications and active student organizations - the college encourages contact among students, faculty and members of the design professions. The college is a leader in providing international study opportunities. In addition to numerous study abroad courses, there is a summer urban design studio that has been held in Copenhagen, China's Shanghai-Nanjing corridor, and Greece. The Bixler International Initiatives encompass travel opportunities, scholarships, lectures, and exhibitions. The college supports an active and focused internship program for its students, giving them access to elective internship opportunities in the Denver metropolitan area and beyond. There are extensive opportunities for civic engagement, including through paid internships at the college's University Technical Assistance Program and other funded research and service projects.

Scholarships/Financial Aid

Graduate students in the college have access to a number of scholarships and other financial assistance funds. Some are based on need, others on performance and still others are specifically intended to

provide enrichment opportunities. Some of these funds are provided by the institution itself, while others are provided by external sources like the American Institute of Architects Architectural Education Foundation, the American Planning Association and the Associated Landscape Contractors of Colorado. For further information on scholarships and graduate tuition awards, visit the college's website. For information on federal and state financial aid, contact the Office of Financial Aid at the University of Colorado Denver or visit its website (<https://www.ucdenver.edu/student-finances/financial-aid/>).

College of Architecture and Planning Courses

Click here (p. 531) to see a complete list of courses.

College of Architecture and Planning Admissions Information

Application Deadlines

For Fall Semester:

- Master of Architecture Program (MArch): January 15
- Master of Landscape Architecture Program (MLA): February 1
- Master of Urban and Regional Planning Program (MURP): January 15
- Master of Science in Historic Preservation Program (MSHP): Priority Deadline March 15
- Master of Urban Design Program (MUD): Priority Deadline April 1, Final Deadline June 15
- PhD in Geography, Planning, and Design (PhD): December 15

Decision notification dates vary by program.

For Spring Semester:

- Please see departmental websites (<https://architectureandplanning.ucdenver.edu/>) for spring admission deadlines and information. Not every department offers spring admission each year.

General Requirements

The college periodically updates admissions deadlines and application procedures. Please visit the college website to view current deadlines, application procedures and required materials.

Applicants to the College of Architecture and Planning graduate programs are required to submit the following credentials:

- University of Colorado Denver online application.
- Official transcripts from each institution the applicant has attended excluding study abroad institutions where the courses are included on the home institution transcripts.
- A statement of purpose that addresses career objectives and reasons for pursuing the intended program of study.
- A portfolio of creative work - required for Architecture, Landscape Architecture and Urban Design. Suggested for Historic Preservation for students with prior design experience.
- A sample of writing or a work project - required for Urban and Regional Planning.
- Three letters of recommendation.
- Graduate Record Exam (GRE) scores are encouraged for the Urban and Regional Planning program.

- However, if you are applying to the Urban and Regional Planning program and your GPA is below 3.0, you must submit GRE scores.
- Graduate Record Exam (GRE) scores are highly advised if your GPA is below 3.0 and you are applying for the Architecture, Landscape Architecture, Historic Preservation or Urban Design programs.
- GRE scores are strongly encouraged for applicants to the PhD program.
- You must hold at least a bachelor's degree for admission to all professional master's programs. For admission to the Master of Urban Design program, a prior professional degree - normally the master's - is required in addition to a bachelor's degree.
- Application fee. Nonrefundable (\$50, U.S. residents; \$75, International applicants).
- English language proficiency scores are required for international applicants when English is not their first language. Please see the International Admissions website (<https://www.ucdenver.edu/international-admissions/>) for current minimum score requirements.

Confirmation Deposit

A nonrefundable confirmation deposit of \$150 is required to secure an applicant's place in the college. The deposit is due at the time the applicant accepts the program's offer of admission. The deposit will be applied to the first semester's tuition when the student registers for classes. This deposit is in addition to the \$150 Registration Advanced Deposit that all students are required to pay to the Bursar's Office before the first semester that they register.

College of Architecture & Planning Departments and Programs

- Architecture (p. 131)
 - Architecture, MArch (p. 139)
- Landscape Architecture (p. 142)
 - Landscape Architecture, MLA (p. 147)
- Urban and Regional Planning (p. 150)
 - Urban and Regional Planning, MURP (p. 157)
- Other Graduate Programs (p. 161)
 - Geography, Planning, and Design, PhD (p. 163)
 - Historic Preservation, MS (p. 166)
 - Urban Design, MUD (p. 167)
- Graduate Certificates (p. 170)
 - Design Build Graduate Certificate (p. 170)
 - Geospatial Information Science Graduate Certificate (p. 170)
 - Historic Preservation Certificate (p. 171)
 - Integrated Construction, Management + Leadership Graduate Certificate (p. 172)

College of Architecture and Planning Policies

Academic Standing

Students must maintain a minimum overall GPA of 3.0 in the graduate programs to remain in good standing and to graduate. If a student's GPA falls below a 3.0, then he or she will be placed on academic probation beginning the following semester. If the GPA remains below a 3.0 after

the probationary semester, then he or she may be dismissed from the college.

Grade Policy

In addition to maintaining a GPA of 3.0 or above, each program requires specific minimum grades which a student must earn in order to count a class towards their degree. Students should meet with their academic advisor or reference the student handbook to learn more about the minimum passing grades.

Grade Appeals

Any student may appeal the grade he or she receives in a class within 30 days from the issuance of the grade. The student should first discuss the issue and adjustment sought with the relevant course instructor. If the course instructor does not reply within 30 days, the student submits a written appeal to the department chair. Within 30 days, the department chair shall process the appeal and prepare a written report explaining the reason(s) for the department recommendation. If the grade appeal still remains unresolved at the department level, the student submits a written request to the associate dean of academic affairs, who will direct the Academic Affairs Committee to review the appeal. If the grade appeal remains unresolved at the college level, the student may appeal to the dean.

Attendance and Timeliness of Work

Students are expected to attend all meetings of classes. Excessive unexcused absences may result in a grade reduction at the discretion of the instructor. Absence from a class will be excused for verified medical reasons, religious obligations or for extreme personal emergencies. The student may be required to furnish evidence.

Students' assignments are to be completed in a timely manner. Any assignment turned in late may have its grade reduced by an amount set at the discretion of the instructor. An assignment may be turned in late without penalty for verified medical reasons, religious obligations or for extreme personal emergencies. Students must have their instructor's written permission to turn an assignment in late. Students with excused late work may turn in the assignment by the end of finals week without penalty. Otherwise, the grade "I" will be assigned at the discretion of the faculty.

Course Sequencing and Advancement

Programs in the college are structured so that certain courses must be taken concurrently, others sequentially. Students will not be allowed to enroll in a course if its co-requisites or prerequisites have not been satisfied.

Originality of Work

Students must submit their own work. Where other sources are used in a student submission, they are to be clearly identified and referenced. The university considers plagiarism and similar acts of falsification to be a serious matter that may result in suspension or expulsion. Information on codes of conduct and grievance procedures are available from the university's Office of Community Standards and Wellness.

Retention of Student Work

The College of Architecture and Planning may, with a student's written permission, retain student work submitted in fulfillment of class requirements for a period of time. This retained work is normally used to provide accrediting agencies with tangible evidence of performance, to serve as additional visual aid material in presentations to other students

and to contribute to possible educational exhibits requested by the university community and the general public.

Architecture

Chair: Marc Swackhamer
Telephone: 303-315-1000

Overview

The College of Architecture and Planning offers a pre-professional Bachelor of Science in Architecture (BSArch) degree and the professional Master of Architecture (MArch) degree which is fully accredited by the National Architectural Accrediting Board (NAAB).

Architecture, MArch

The Master of Architecture is offered to students who have completed a pre-professional architecture degree, as well as to students who have completed an unrelated undergraduate or graduate degree. Students holding a pre-professional degree will be evaluated individually for advanced standing in the MArch program, commensurate with their previous educational experiences.

Our program prepares students for entry into the architecture profession and licensure. Our mission is to lead in the discovery, communication and application of knowledge in the discipline of architecture by integrating theory and practice. In this collaborative educational model, environmental, economic, social, cultural, aesthetic and ethical concerns are fundamental.

The curriculum responds to and aligns with the evolving nature of professional practice including collaborative work environments, critical thinkers, problem-solving team players, builders and leaders with excellent communication skills. Recognizing that the practice of architecture is global, we provide students with international perspectives and experiences giving them a competitive edge when they enter the profession.

Students whose undergraduate degree was not a design related degree will take a minimum of three years to complete the Master of Architecture. Students who have an undergraduate design related degree may receive credit for courses previously taken and can typically complete the program in two years depending on advanced standing given. The program provides the skills and bodies of knowledge nationally specified for graduate study in architecture and is fully accredited by the National Architectural Accrediting Board (NAAB).

(For Undergraduate Programs and information please refer to the [Undergraduate](#) catalog.)

Programs

- Architecture, MArch (p. 139)

(For Undergraduate Programs and information please refer to the [Undergraduate](#) catalog.)

Faculty

Professors:

Amir Ameri, PhD, Cornell University
Julee Herdt, MArch, Southern California Institute of Architecture
Michael K. Jenson, PhD, University of Edinburgh

Laurence K. Loftin III, MArch, University of Virginia
Marc Swackhamer, MArch, Rice University
Ekaterini Vlahos, MArch, University of Colorado Denver

Associate Professors:

Osman Attmann, PhD, Georgia Institute of Technology
Christopher Koziol, PhD, University of Colorado Denver

Assistant Professors:

Erik Sommerfeld, MArch, University of Colorado Denver
Kevin Hirth, MArch, Harvard Graduate School of Design
Matthew Shea, MArch, University of Colorado Denver

Assistant Professors (Clinical Teaching Track):

Barbara Ambach, MArch, Southern California Institute of Architecture

Visiting Assistant Professors:

Annicia Streete, MArch, University of Colorado Denver

Instructors:

Matt Gines, MArch, University of North Carolina Charlotte
Jo Vanenburg, MArch, University of Colorado Denver

Visiting Instructors:

Mira Woodson, MFA, University of New Mexico

Visiting Teaching Fellow:

Will Koning, MArch, University of Colorado, Denver

Additional information about faculty in this department is available on the college website. (<https://architectureandplanning.ucdenver.edu/>)

Architecture (ARCH) Courses

ARCH 5000 - Math and Physics for Architects (3 Credits)

Provides the review of mathematics and physics. This is a prerequisite for the graduate technology courses. Does not count toward the required credits for the MARCH degree. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Typically Offered: Summer.

ARCH 5110 - Design Studio I (6 Credits)

The first of two elemental design studios focused on the language of design, organizational and spatial systems and principles as well as on analog and digital methods of visualizing architectural ideas and forms. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5120 - Design Studio II (6 Credits)

The second of two elemental design studios focused on translating organizational and spatial systems, principles and concepts into architectural systems. Through a number of small scaled design exercises students learn how organizational and spatial systems can be leveraged in the design of their buildings. Prereq: ARCH 5110 and ARCH 5510. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5130 - Design Studio III (6 Credits)

The first of the two analytical design studios addresses how design ideas are formed through the analysis of the program in terms of action and perception and how to transform those ideas into formal strategies and specific architectural experiences. Prereq: ARCH 5120. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5140 - Design Studio IV (6 Credits)

The second of the two analytical studios will build upon ideas developed in the previous studio concerning how the analysis of the program in terms of action and perception inform the formal strategies and the design of specific architectural experiences. Prereq: ARCH 5130. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5210 - Introduction to Architecture (3 Credits)

Introduces important ways of looking at architecture and acquaints students with the various perspectives that they will later find in the rest of the curriculum. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5220 - History and Theory Architecture I (3 Credits)

Introduces world architecture and urbanism from prehistory to the Italian Renaissance. The course helps students understand the various cultural, technological, philosophical, and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5230 - History and Theory Architecture II (3 Credits)

Examines world architecture and urbanism from the Italian Renaissance to the present. Helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5310 - Building Construction I (3 Credits)

The first of a two-course sequence that provides an overview of the structure, systems, assemblies and processes that make a building. Provides a broad view of building technology and an understanding of the interrelationship of all the parts. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5320 - Building Construction II (3 Credits)

This course focuses on principles and processes of building construction, and introduces major constructional systems. It stresses the relationship between architectural concepts and building technology and assemblies.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5330 - Sustainable Systems I (3 Credits)

The first course in the sustainable systems sequence introduces concepts and design methods of energy-efficient environmental control in buildings including thermal and moisture loads, heating, ventilation and air conditioning equipment and systems, and active and passive thermal strategies. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 5340 - Sustainable Systems II (3 Credits)

The second course in the sustainable systems sequence introduces concepts and design methods of plumbing, power distribution, renewable electricity, artificial illumination, daylighting, acoustics, vertical transportation, fire protection, and telecommunication systems in buildings with a focus on energy and resource efficiency. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 5350 - Structures I (3 Credits)

The first course in the structures sequence introduces the analysis and design of structural elements and focuses on the principles of statics and the strength of materials. Topics include stress determination, deflection and the behaviors of tension, compression and shear in various structural elements. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5360 - Structures II (3 Credits)

Focuses on the relationship between architectural concepts and the selection of structural systems. Addresses the qualitative and quantitative analysis of reinforced concrete, steel and wood structural systems and members. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5410 - Professional Practice (3 Credits)

Introduces the essential elements of professional practice through topics such as internship, licensing, services, modes of practice, fees, marketing, documents, specification and production procedures. Examines traditional and emerging forms of practice. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5420 - BIM: Principles & Practices (3 Credits)

Introduces basic aspects of building information modeling (BIM) concepts, software, development, management and delivery for architectural projects. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5430 - Social Context of Design (3 Credits)

Focuses on the ethical, social, cultural and psychological principles, which people bring to the perception and design of the built environment. Its major topics include: ethical values; cultural patterns and values; social, cultural and personal ritual; and pre-design and programming. Prereq: Graduate ARCH students only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5450 - Sustainable Design Practices (3 Credits)

This course explores sustainable principles and practices as it relates to the design, construction of both the building and its site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5510 - Architectural Graphics (3 Credits)

This course explores the development of graphic skills emphasizing drawing as a means to design. It includes investigation of drawing types and methods; diagramming of ideas and systems; informative, exploratory and developmental sketching. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6150 - Design Studio V (6 Credits)

The first of two reflective studios will assume reflective/critical stance towards programmatic issues or rather cultural presuppositions and critically explore the ways in which architecture can play a critical as well as an affirmative role within the broader cultural context. Prereq: ARCH 5140. Coreq: ARCH 6151. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6170 - Design Studio VI (6 Credits)

This is the second of two reflective studios, which focuses on the comprehensive design of an architectural project including considerations of structural systems, environmental systems, life safety concerns, regulatory considerations, wall sections, building assemblies and significant detail. Prereq: ARCH 6150. Coreq: ARCH 6171. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Coreq: ARCH 6171 Restriction: Restricted to ARCH graduate students within the College of Architecture and Planning

ARCH 6171 - Integration Seminar (3 Credits)

In this seminar students will develop and document the technical aspects of their Design Studio VI design projects including, life safety, mechanical, electrical, plumbing, conveyance, accessibility systems and material assemblies. Prereq: ARCH 6150, ARCH 6151. Coreq: ARCH 6170. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Coreq: ARCH 6170 Restriction: Restricted to ARCH graduate students within the College of Architecture and Planning

ARCH 6180 - Furniture Design (3 Credits)

Students learn how to design and build furniture in the College's woodshop. Topics include ergonomics, properties of materials, principles and techniques of joinery and techniques of hand and machine tools. Cross-listed with ARCH 3709. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6185 - Digital Design & Fabrication (3 Credits)

An introductory class to Computer Aided Design (CAD) and Computer aided manufacturing (CAM). Students explore how these technologies apply to the field of architecture with a focus is on parametric/algorithmic design approaches and mass customization manufacturing techniques. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6190 - Special Topics in Design Studies (3 Credits)

Various topics in design, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6195 - Aspen Summer Workshop (3 Credits)

Three weeks with three world class architecture firms in Roaring Fork Valley. The firms lead students through a unique design project that develops and challenges their observational, conceptual, and visualization abilities. Drawing as a means of seeing, understanding and creating dominates the process/ethic of the course. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6205 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and URPL 6405. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6210 - A History of American Architecture (3 Credits)

This course traces the history of architecture in North America from the early colonial settlements in the late 17th century to the corporate architecture of the late 20th century. The various formal languages and theories that have shaped the history of American architecture will each be discussed through the close examination of a select group of buildings within their specific cultural, social, political, and economic contexts. Prereq: ARCH 5220 and ARCH 5230. Cross-listed with ARCH 4610. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5220 and ARCH 5230.

ARCH 6212 - A History of Modern Architecture (3 Credits)

This course traces the various theoretical and formal developments in European and American Architecture from the end of the 19th century through the 20th century. The works of a select group of architects will be examined and discussed in relation to the diverse body of goals and objectives, ideas and ideals that constituted the Modern movements in architecture. Prereq: 5230. Cross-listed with ARCH 4612. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5230.

ARCH 6220 - A History of Theoretical Discourse on Architecture (3 Credits)

This course traces the history of theoretical discourse on architecture from the Renaissance to the present. It explore the genealogy of current theoretical stances and critical methodologies in the discipline of Architecture through the close reading of a select group of historic and contemporary texts. Prereq: ARCH 5230. Cross-listed with ARCH 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5230.

ARCH 6222 - Contested Terrains (3 Credits)

Explores the different processes, factors and forces and determines and influences occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6230 - Preservation Theory and Practice (3 Credits)

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with HIPR 6010. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6231 - Regionalisms & the Vernacular (3 Credits)

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Cross-listed with HIPR 6110. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6232 - Reading the City (3 Credits)

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Prereq: HIPR 6410 is recommended. Cross-listed with HIPR 6610. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6233 - Historic Buildings in Context (3 Credits)

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept.

Procedures and skills are introduced. Prereq: HIPR 6010 or permission of instructor. Cross-listed with HIPR 6210. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6240 - History Of The City (3 Credits)

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with URBN 6640. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6241 - Studies in Tectonics (3 Credits)

This research seminar focuses on tectonics - the logic of structure & material combinations (wood, metal, stone, masonry etc.). Through case studies, the relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary architectural concerns. Prereq: HIST I & II. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6254 - Architecture, In Theory (3 Credits)

Explores theories and texts that have influenced the analysis and the production of architectural form. The focus is on the expressive potential of architectural forms and the modalities of the realization of this potential. Cross-listed with DSPL 7016. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6255 - Cultural Institutions (3 Credits)

Selected types of cultural institutions including art museums, libraries, cultural centers, theaters, etc. are studied in this research seminar. Through case studies and readings, their ongoing cultural, architectural and corporate values are examined. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6256 - Community Development (3 Credits)

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with URPL 6400. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6257 - Community Engaged Design Practice (3 Credits)

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with LDAR 6635 and LDAR 4435. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6258 - Social Justice in Planning (3 Credits)

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and LDAR 6637. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6259 - The Art of Traditional Design (3 Credits)

Introduction to Philosophy, History and Design Methods of Traditional Design derived from Greek precedents developed through the Renaissance and later the Beaux Arts. The course will emphasize this influence on the Architecture of the United States. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6260 - Architectural Precedents (3 Credits)

Explores a number of traditional answers to recurring design issues, such as how to approach and enter a building or how to design a facade. In a seminar setting, students examine traditional ideas for their underlying principles and design new architectural compositions based on those principles. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6261 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Cross-listed with URBN 6625 and URPL 6395. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6270 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with URPL 6350, URBN 6525, and LDAR 5530. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6275 - History Native Amer Arch (3 Credits)

Introduces Native American architecture from the 12th century to the present. The course helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape these buildings throughout history. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6290 - Special Topics in Cultural Studies (3 Credits)

Various topics in cultural studies, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 21 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 21.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Cultural Studies Area.

ARCH 6310 - Greenbuilding Tech (3 Credits)

This seminar will advance the student's knowledge of environmental building and construction methods through studies in material resources, innovative green systems, alternate green technology, energy efficiency, and affordability in "green architectural design." Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6313 - LEED Certification, Greenbuilding Seminar (3 Credits)

This RIGOROUS course will use the LEED Certification process to provide a framework for assessing building performance and meeting sustainability goals, following the 1st step in a two stage Professional Accreditation process, focusing on LEED GA, Green Associate Accreditation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6314 - LEED AP Advanced Greenbuilding Seminar (3 Credits)

This advanced LEED Certification and Accreditation course builds on the first LEED GA course, providing a framework for assessing green building performance and sustainability goals, exploring advanced green building concepts and preparing the student for the LEED AP BD+C exam. Prereq: ARCH 6313 or instructor approval. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 6313 Restriction: Restricted to majors within the College of Architecture and Planning

ARCH 6351 - Building Conservation (3 Credits)

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6352 - Documentation, Analysis, Representation (3 Credits)

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & Photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Cross-listed with HIPR 6310. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6353 - Daylighting Design (3 Credits)

Daylighting is the use of light from the sky to illuminate building interiors. The objective of this course is to introduce students to the fundamentals of daylighting design including how it is perceived and how it impacts building energy flows. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6355 - Urban Conservation: Context for Reuse (3 Credits)

Human habitats (especially cities) are dynamic. The preservationist cannot freeze cities in a static representation of the past. The course deals with philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. Cross-listed with HIPR 6410. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6356 - Adaptive Reuse: Business and Practice (3 Credits)

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists.

Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with HIPR 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

ARCH 6357 - The Poetic Detail-Studies in Tectonics—Wood (3 Credits)

This research seminar focuses on tectonics through traditional timber frame and wood construction case studies. The relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary concerns. Learning by making. Cross-listed with ARCH 3704. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6370 - Introduction To Design Build (3 Credits)

Introduction to Design Build project delivery methods important to architects. Lecture, research on the industry and an individual student project are the methods used to introduce ethical questions, role of the architect, owner, consultant and subcontractors. Work leads to studio project or case study. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6373 - Construction in Design Build (3 Credits)

Using a single project, students fully explore the design phase, estimating, scheduling and project management skills in traditional construction. Course is concurrent with an advanced studio and builds a project on a site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6375 - Green Tech Eco-Furniture Fabrication I (3 Credits)

Green Tech I is the first of two courses that are a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Coreq: ARCH 6376.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3804. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6376 Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6376 - Green Tech Eco-Furniture Fabrication II (3 Credits)

Green Tech II is the second of two courses that is a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Students must be enrolled in both Green Tech I and Green Tech II in the same semester. Coreq: ARCH 6375. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3806. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6375 Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6377 - EcoFAB: Furniture Design and Fabrication for Small-Scale Residential Architecture (3 Credits)

This unique, quick-paced seminar focuses on small-scale residential design, from tiny-homes, to prefab, and movable residences. Students learn Small Home design, methods, and techno-systems, then using green materials, they design and fabricate architectural elements and furniture for enhancing small-scale living. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3807. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6390 - Special Topics in Technology (3 Credits)

Various topics in technology, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Technology Studies Area.

ARCH 6412 - Construction Documents (3 Credits)

Introduces the concepts and techniques of construction documents.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6413 - Construction Leadership (3 Credits)

The final course is an integrated architecture, engineering, and construction business course bringing together executives, principals, and managers to current industry topics and provide students opportunities to apply management and leadership principles from the various fields to case study projects. Crosslisted with CVEN 5238.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6420 - Integrated Practice & BIM Technology (3 Credits)

This class will be a general overview of integrated practices and technologies used in today's industry. Understanding the nature of how information is created and managed using BIM technologies will help us define a road map for how information passes downstream and bring value to a project. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6450 - Pre-Design (3 Credits)

Course lectures, readings, and case studies cover pre-design methodologies, research, documentation, facilitation and consensus building. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6463 - BIM: Emerging Prof. Practices (3 Credits)

The 21st century architect's emerging role is designing the design process. BIM (Revit) attempts to optimize the entire process, including all participants, from conceptual design, through post-building occupancy. These capabilities are explored and developed. Prereq: ARCH 5430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6464 - BIM: Advanced Design Concepts (3 Credits)

BIM's complexity (Revit) challenges all designers. The emerging tool is very sophisticated, but its benefit are not realized from modeling alone. We address architectural design as a multifaceted optimization process: concept, form, and function. Prereq: ARCH 5430. Cross-listed with ARCH 6390. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6470 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with LDAR 6470 and URPL 6850. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6471 - Managing Quality & Risks (3 Credits)

A lecture and seminar on approaches to risk management including contracts, insurance, financial analysis, dispute resolution and client relationships. Utilizing case study approach, quality assurance will be defined and studied in the design and building phase of workings. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6472 - Architecture in a Single Source Project Delivery (3 Credits)
Directed to the practice of architecture with design build and other single source delivery systems. This course examines requirements of codes, zoning, building systems and legal questions for the architect.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6473 - Research Tools & Methods (3 Credits)

Introduces the thesis in architecture and establishes the scholarly basis for the research and construction of a Master's Thesis project. This course will provide the student with the research practices and methodologies to develop the scholarship and products required to produce a Thesis Project Proposal. Completion of this course is a prerequisite for the student to submit the Thesis Proposal for departmental approval to continue with the remaining 9 credits of thesis work. Cross-listed with LDAR 6949. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6475 - BIM/Flow of Information (3 Credits)

The course is geared toward CAP students, non-degree seeking working professionals and other students interested in the Integrated Construction, Management and Leadership (ICML) Certificate. This class will be a general overview of Virtual Design and Construction (VDC) in today's AEC industry. Restriction: Graduate students. Junior standing and above undergraduate students are eligible to take course with approval by instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

ARCH 6490 - Special Topics in Professional Studies (3 Credits)

Various topics in professional studies according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Professional Studies Area.

ARCH 6510 - Digital Applications in Design (3 Credits)

This course introduces first year design students to the Graphic Design Concepts and Digital Applications necessary to create digital, printed and physical presentations of their work. Students learn computer skills including: raster and vector based programs and digital modeling. Prereq: ARCH 5110 and ARCH 5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6515 - Adv. Digital Representation (3 Credits)

In this course students will learn advanced techniques of architectural representation using digital modeling, rendering engines, and post processing in the Adobe Creative Suite. Prereq: ARCH 5510 and 6510 or equivalent. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6530 - The Art of Proportion (3 Credits)

This course covers the use of proportional systems in the Classical tradition. Students complete a series of graphic exercises culminating in the construction of a Beaux-Art style ink-wash of a classical column. Cross-listed with ARCH 6290 and HIPR 6090. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6550 - Digital Portfolio Design (3 Credits)

This course introduces students to the Graphic Design Concepts and the Digital Applications used to create both Printed and Web-based Portfolios. Students must have completed ARCH 5110 and have a working knowledge of Photoshop. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6560 - Architecture Photography (3 Credits)

Emphasizes and understanding of light, composition, color and problem solving, with a particular goal of applying these skills to the photography of architectural exteriors and interiors. For students who have access to adjustable 35 mm digital cameras. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6570 - Sketching As Seeing (3 Credits)

Sketching promotes seeing, and seeing promotes thinking. This course is designed to help you think & see by the regular practice of sketching & the discipline of keeping a sketchbook. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6575 - 2D-3D & 4D Design Space (3 Credits)

The graphics language of words and art bridge intention and design. Passing ideas and mental imagery through digital technology's 2D, 3D and 4D filters is the challenge. Students develop concepts in AutoCAD, visualize in 3DStudio Max, and narrate the process in Adobe Premiere.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6580 - High-Performance Façade Design (3 Credits)

It is the intent of the course to provide graduate students with a comprehensive understanding of the technical concepts and specific skills necessary to undertake in actual practice the design, detailing, specification, and construction administration of high-performance building facades. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max Hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6590 - Special Topics in Representational Studies (3 Credits)
Various topics in representational studies, according to current faculty and student interests. Prereq: ARCH 5510. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 15.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6710 - Architecture in Other Cultures (1-9 Credits)
Various studies of architecture and urbanism in foreign countries. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 12 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6715 - The Built Environment in Other Cultures I: Research Design (3 Credits)

The intent is to broaden students' perspectives by asking them to examine design within another culture. Each student prepares a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken and the nature of the report to be produced. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6755 - Rome: Architecture & Urbanism (3 Credits)

The objective of this course is to provide a broad overview of the city's major architectural sites, topography, infrastructure and systems of urban design and organization through the study of the rich palimpsest of buildings, piazzas and landscapes from antiquity to the present day. Coreq: ARCH 6760. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3693. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6760. Restriction: Restricted to ARCH graduate students.

ARCH 6760 - Rome: Documentation, Analysis and Design (3 Credits)

With graphic representation as the primary mode of inquiry, this course is an intensive study of a single building, piazza or landscape within the rich urban fabric of Rome. The graphical inquiry will be supported by pre-departure research and onsite observation and presentations. Coreq: ARCH 6755. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3694. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6755. Restriction: Restricted to ARCH graduate students.

ARCH 6775 - Bluff General Elective (3 Credits)

Provides students the opportunity to focus their attention on one of three areas: technical studies, professional studies, or cultural studies. Students will complete coursework as it relates to Design Build Bluff. Counts as a general elective. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6840 - Independent Study (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to architecture. Prereq: Permission of instructor. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ARCH 6910 - Teaching Assistantship (3 Credits)

Work with a faculty member in a course to help with class preparation and delivery. This is intended for students who may be considering a career in teaching architecture. Prereq: Permission of instructor.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ARCH 6930 - Architecture Internship (3 Credits)

Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

ARCH 6931 - Architecture Internship (3 Credits)

Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

ARCH 6950 - Thesis Preparation (3 Credits)

In place of the final advanced design studio, students may choose to develop a specialized thesis in some topic related to architecture. The thesis will normally take three semesters, starting with the three-credit hour ARCH 6473, Research Tools & Methods in the spring semester, this course in the fall semester and finishing with a six-credit thesis class in the third semester. A thesis may culminate in a design or in a written report. A thesis is expected to advance the field in some way by offering new insights into aspects of design, technology, history or professional principles. Prereq: ARCH 6490 and completion of at least one advanced design studio (ARCH 6170 or ARCH 6171). Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

ARCH 6951 - Architecture Thesis (6 Credits)

Development of a master's thesis (see ARCH 6950 above). Prereq: completion of two advanced design studios ARCH 6150 and ARCH 6950. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

ARCH 7840 - Independent Study (1-3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

Architecture, MArch Introduction

The Master of Architecture is offered to students who have completed a pre-professional architecture degree, as well as to students who have completed an unrelated undergraduate or graduate degree. Students holding a pre-professional degree will be evaluated individually for

advanced standing in the MArch program, commensurate with their previous educational experiences.

Our program prepares students for entry into the architecture profession and licensure. Our mission is to lead in the discovery, communication and application of knowledge in the discipline of architecture by integrating theory and practice. In this collaborative educational model, environmental, economic, social, cultural, aesthetic and ethical concerns are fundamental.

The curriculum responds to and aligns with the evolving nature of professional practice including collaborative work environments, critical thinkers, problem-solving team players, builders and leaders with excellent communication skills. Recognizing that the practice of architecture is global, we provide students with international perspectives and experiences giving them a competitive edge when they enter the profession.

Students whose undergraduate degree was not a design related degree will take a minimum of three years to complete the Master of Architecture. Students who have an undergraduate design related degree may receive credit for courses previously taken and can typically complete the program in two years depending on advanced standing given. The program provides the skills and bodies of knowledge nationally specified for graduate study in architecture and is fully accredited by the National Architectural Accrediting Board (NAAB).

Prerequisites

Students must complete the prerequisites of college-level trigonometry and physics before enrolling in the MArch program or must complete ARCH 5000 Math and Physics for Architects. This course is offered during the summer on a pass/fail basis and meets the prerequisite requirements. This class does not count toward the number of credits required for the MArch degree.

The architecture skills workshop is highly recommended for students who do not have a background in architectural drawing, model making or digital graphics work. This class is offered each year before the beginning of the fall semester.

Students are expected to have achieved a basic level of computer literacy and should be familiar with PC or Mac operating systems.

Program Tracks

There are two curriculum tracks leading to the MArch degree.

Four Studio Track (p. 140) - minimum 63Semester Hours

This course of study allows those students with a pre-professional degree to pursue a professional Master of Architecture degree in a minimum of two years (the total duration of the program will vary). The curriculum follows a prescribed sequence of four design studios combined with core courses and electives. Applicants must hold a Bachelor of Science in Architecture, Bachelor of Art in Architecture or Bachelor of Environmental Design to be considered for this track.

Six Studio Track (p. 141) - 105 Semester Hours

This course of study allows students without a pre-professional degree to pursue a professional Master of Architecture degree in a minimum of three years (the total duration of the program will vary). The curriculum follows a prescribed course of six design studios, fundamental core

courses and electives. Applicants must hold a baccalaureate degree from an accredited university in any field.

All degrees awarded by universities outside the United States will be reviewed on a case-by-case basis and the admissions committee will determine the appropriate track.

Four Studio Track

Curriculum Overview

The Four Studio Track curriculum for the Master of Architecture (MArch) program is divided into six major components, totaling a minimum of 63 semester hours in residence at the University of Colorado Denver.

Code	Title	Hours
Design Studios and Seminars		27
ARCH 5130	Design Studio III (Fall)	
ARCH 5140	Design Studio IV (Spring)	
ARCH 6150	Design Studio V (Fall)	
ARCH 6170	Design Studio VI (Spring)	
ARCH 6171	Integration Seminar (Spring)	
Representational Studies ¹		3
Historical/Cultural Studies ¹		3
Technological Studies ¹		3
Professional Studies		12
ARCH 5410	Professional Practice (Fall)	
ARCH 5420	BIM: Principles & Practices (Fall or Spring)	
ARCH 5430	Social Context of Design (Fall)	
ARCH 5450	Sustainable Design Practices (Spring)	
Architecture Electives		9
Open Electives		6
Total Hours		63

¹ Required Elective.

Electives

A wide array of electives in these areas allows students to tailor their graduate studies to their own interests. Students may choose to take elective courses in the summer session. It is highly suggested that students use the summers to study abroad or participate in a professional internship.

In order for a student to complete the course of study within the 60 semester hours (two years of study) a student must have completed the following courses with a grade of B or better:

- 4 design studios (six credits each)
- 2-3 course sequence covering the history of architecture
- 1 course introduction to the theory of architecture
- 2 course sequence on sustainable environmental control systems
- 2 course sequence on structures addressing statics, material mechanics, structural analysis, and design of simple structural elements and systems
- 2 course sequence on building materials and construction
- 1 course on architectural visualization and representation

Above courses not completed by the time the student enrolls in the program will be added onto the 60 semester hours and will need to be completed at the University of Colorado Denver prior to graduation. An

official review of the student's previous course work will be conducted in the spring following admissions and will be sent to the student upon the receipt of the student's intent to attend.

Six Studio Track

Curriculum Overview

The curriculum for the Master of Architecture (MArch) program is divided into six major areas of study, totaling 105 semester hours:

Code	Title	Hours
Design Studios and Seminars		39
ARCH 5110	Design Studio I (Fall)	
ARCH 5120	Design Studio II (Spring)	
ARCH 5130	Design Studio III (Fall)	
ARCH 5140	Design Studio IV (Spring)	
ARCH 6150	Design Studio V (Fall)	
ARCH 6170	Design Studio VI (Spring)	
ARCH 6171	Integration Seminar (Spring)	
Representational Studies ¹		6
ARCH 5510	Architectural Graphics (Fall)	
Historical/Cultural Studies ¹		12
ARCH 5210	Introduction to Architecture (Fall)	
ARCH 5220	History and Theory Architecture I (Spring)	
ARCH 5230	History and Theory Architecture II (Fall)	
Technological Studies ¹		21
ARCH 5310	Building Construction I (Fall)	
ARCH 5320	Building Construction II (Spring)	
ARCH 5330	Sustainable Systems I (Spring)	
ARCH 5340	Sustainable Systems II (Fall)	
ARCH 5350	Structures I (Fall)	
ARCH 5360	Structures II (Spring)	
Professional Studies		12
ARCH 5410	Professional Practice (Fall)	
ARCH 5420	BIM: Principles & Practices (Fall or Spring)	
ARCH 5430	Social Context of Design (Fall)	
ARCH 5450	Sustainable Design Practices (Spring)	
Architecture Electives		9
Open Electives		6
Total Hours		105

¹ Required Electives

Electives

A wide array of electives in these areas allows students to tailor their graduate studies to their own interests. Advanced standing in core course work can be given for prior architectural studies. Students may choose to take elective courses in the summer session. It is highly suggested that students use the summers to study abroad or participate in a professional internship.

Four-Studio Course Sequence

This schedule shows the recommended sequence of courses. To modify this schedule, students should consult their CAP academic advisor.

Course	Title	Hours
First Year		
Fall		
ARCH 5130	Design Studio III	6
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Hours		15
Spring		
ARCH 5140	Design Studio IV	6
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Professional Studies or Elective ²		3
Hours		18
Second Year		
Fall		
ARCH 6150	Design Studio V	6
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Hours		15
Spring		
ARCH 6170	Design Studio VI	6
ARCH 6171	Integration Seminar	3
Professional Studies or Elective ¹		3
Professional Studies or Elective ¹		3
Hours		15
Total Hours		63

¹ Students may choose from course offerings. Individual plans will vary depending on transfer credit awarded. For additional information, please see your academic advisor.

² Summer courses are optional in the Four Studio Track.

Six-Studio Course Sequence

This schedule shows the recommended sequence of courses. To modify this schedule, students should consult their CAP academic advisor.

Course	Title	Hours
First Year		
Fall		
ARCH 5110	Design Studio I	6
ARCH 5210	Introduction to Architecture	3
ARCH 5350	Structures I	3
ARCH 5510	Architectural Graphics	3
Professional Studies or Elective Requirement		3
Hours		18
Spring		
ARCH 5120	Design Studio II	6
ARCH 5220	History and Theory Architecture I	3
ARCH 5360	Structures II ¹	3
Professional Studies or Elective Requirement		3

Professional Studies or Elective Requirement	3
Hours	18
Second Year	
Fall	
ARCH 5130 Design Studio III	6
ARCH 5230 History and Theory Architecture II	3
ARCH 5310 Building Construction I	3
Professional Studies or Elective Requirement	3
Professional Studies or Elective Requirement	3
Hours	18
Spring	
ARCH 5140 Design Studio IV	6
ARCH 5320 Building Construction II	3
ARCH 5330 Sustainable Systems I	3
Professional Studies or Elective Requirement	3
Professional Studies or Elective Requirement	3
Hours	18
Third Year	
Fall	
ARCH 6150 Design Studio V	6
ARCH 5340 Sustainable Systems II	3
Professional Studies or Elective Requirement	3
Professional Studies or Elective Requirement	3
Professional Studies or Elective Requirement	3
Hours	18
Spring	
ARCH 6170 Design Studio VI	6
ARCH 6171 Integration Seminar	3
Professional Studies or Elective Requirement	3
Professional Studies or Elective Requirement	3
Hours	15
Total Hours	105

¹ Students are expected to complete ARCH 5350 Structures I prior to taking ARCH 5360 Structures II.

Landscape Architecture

Interim Chair: Louise, Bordelon, PhD
Email: louise.bordelon@ucdenver.edu

Overview

The Master of Landscape Architecture (MLA) program balances theory and practice to prepare students to create health, well-being and environmental resilience through design in the public realm. Our fully accredited professional program takes full advantage of our location in the heart of Denver and the rapidly growing metro area. The program enables students to enter practice and offers distinctive opportunities for students to engage in meaningful projects that impact our communities and our built environment. We educate landscape architects to lead the design and planning process; successful graduates pursue diverse practices and occupations in public and private arenas around the world.

Our students study relevant issues through classes and immersive experiences that challenge them to think critically about the applications

and implications for the work we do. While grounded in design and professional skills, the curriculum is structured to fluidly address evolving concerns for our profession, our communities and our environment through topics such as health and well-being, water in the west, food systems, and emerging sustainable practices.

Programs

- Landscape Architecture, MLA (p. 147)

Faculty

Professors:

Lois A. Brink, MLA, University of Pennsylvania
Ann Komara, MLA, MArch Hist, University of Virginia

Associate Professors:

Joern Langhorst, Dipl. Ing. (MLA), University of Hannover
Jody Beck, MArch, PhD, University of Pennsylvania

Assistant Professors (Clinical Teaching Track):

Leila Tolderlund, MLA, University of Colorado Denver
Louise Bordelon, MLA, PhD, Louisiana State University

Instructors:

Emmanuel Didier, MLA, MArch, University of Virginia

Additional information about faculty in this department is on the college's website (<https://architectureandplanning.ucdenver.edu/architecture/academics/masters-programs/master-landscape-architecture/>).

Landscape Architecture (LDAR) Courses

LDAR 5500 - Introductory Landscape Architecture Design Studio (3 Credits)

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Prereq: LDAR 5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 5510.

LDAR 5501 - Landscape Architecture Design Studio 1 (3 Credits)

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5502 - Landscape Architecture Design Studio 2 (6 Credits)

Problem-based studio course covers strategies, methods and techniques of landscape architectural design with emphasis in more complex social and urban issues, design processes and development and the application of theory and research. Prereq: LDAR 5501 or permission of department chair. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5503 - Landscape Architecture Design Studio 3 (6 Credits)

Problem-based studio covering the approaches, techniques and means for planning and designing sites to accommodate development program on a particular site within an identifiable context. Covers issues definition, site analysis, programming, development of design strategies, evaluation site planning, and communication. Prereq: LDAR 5501 and LDAR 5502 or permission of department chair. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5510 - Graphic Media in Landscape Architecture (3 Credits)

Introduces basic principles and methods associated with analog and digital drawing-plan, sections, perspectives, color, shading, composition and projection. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5521 - History of Landscape Architecture (3 Credits)

Intro survey course fosters workable understanding of landscape architecture design history and theory and offers a base for understanding trends and ideas influencing contemporary practice. Emphasizes Western Europe and the United States from antiquity to early twentieth century. Cross-listed with LDAR 4421. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate level or senior level or higher students

LDAR 5530 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with URPL 6350, URBN 6525, and ARCH 6270. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 5532 - Landform Manipulation (3 Credits)

Focuses on the fundamental technical aspects of landscape architectural design and site engineering of related topography, grading, drainage design, landform manipulation, earthwork calculations, and road alignment. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5540 - Introduction to GIS (3 Credits)

An introduction to GIS as a set of strategies, methods and techniques used to facilitate the inventory and analysis of complex systems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate Landscape Architecture majors within the College of Architecture and Planning

LDAR 5572 - Landscape Ecology (3 Credits)

Course emphasizes continuity and change in an ecology of the natural and man-made landscape. Focuses on biological, geophysical, cultural, and perceptual factors involved in landscape, spatial organization, and urban and regional structure. Introduces field ecology for landscape architecture. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5573 - Advanced Landscape Ecology (3 Credits)

Critically investigates the performance of complex landscape systems on multiple spatial and temporal scales, with emphasis on the interaction of human and non-human systems. May address issues of sustainability, disaster recovery, mitigation, etc. Prereq: LDAR 5572 or URPL 6500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 5572 or URPL 6500 Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6470 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and URPL 6850. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6520 - Landscape Architecture in Other Cultures (1-9 Credits)

Study abroad. Various studies of landscape architecture, architecture, urbanism, and design to destinations outside of the continental United States. Cross-listed with LDAR 3690. Restriction: Restricted to majors within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6604 - Landscape Architecture Design Studio 4 (3 Credits)

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills.. Prereq: LDAR 5501, 5502, 5503 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6605 - Landscape Architecture Design Studio 5 (3 Credits)

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6606 - Landscape Architecture Design Studio 6 (6 Credits)

Advanced design studio covering landscape change in diverse contexts at various scales and complexities. Recommended: completion of 2 graduate level landscape studios or permission of department chair.

Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6607 - Landscape Architecture Design Studio 7 (3 Credits)

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6608 - Landscape Architecture Design Studio 8 (3 Credits)

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606, 6607 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6620 - Landscape Architecture Theory and Criticism (3 Credits)

Explores and assesses theory in landscape architecture and the concepts, ideas and discourses underlying contemporary design approaches. Emphasizes developing critical understanding of the roles and agency of theoretical inquiries in landscape architecture in relation to aligned disciplines. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6625 - Landscape Architecture Field Studies (3 Credits)

Critical field evaluation of built works of landscape architecture using methodological approaches like field measurement, mapping, sketches, photography, written evaluations and applied research. It may also assess the performative aspects of designed landscapes. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6630 - Site, Society and Environment (3 Credits)

Sites are defined by relationships within environmental and social settings. Therefore site design should be primarily ethical and secondarily technical. This course examines the implications of this idea through site methodologies, conceptual construction of site, site analysis and site typologies. Cross-listed with LDAR 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6631 - Landscape Construction Materials and Methods (3 Credits)

Develops understanding of detailed design processes, construction materials and selection of construction methods and documents. Typically taken with LDAR 6605 and 6606 (LDAR Design Studios 5 and 6). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6632 - Site Planning (3 Credits)

Focuses on site planning processes, criteria and decision-making. Includes research, site analysis, and data synthesis as they relate to site context and design concepts. Also addresses site work (grading and drainage, utilities), cost computation, and creating site and building program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6635 - Community Engaged Design Practice (3 Credits)

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with ARCH 6257 and LDAR 4435. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6636 - Urban and Local Food Systems (3 Credits)

In this seminar, we will examine the connections between landscape architecture and food production in cities as well as the role that food production plays in rural landscapes. The course material may be historical, theoretical, or oriented toward contemporary research. Cross-listed with LDAR 4436. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6637 - Social Justice in Planning (3 Credits)

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and ARCH 6258. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

LDAR 6641 - Computer Applications in Landscape Architecture (3 Credits)

Introduces digital technologies and methods commonly used in landscape architecture including primarily CADD, visualization, graphic design, and other emerging applications. Includes hands-on exercises. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6642 - Landscape Architecture Digital Design Workshop (3 Credits)

Provides hands-on experiences in the principles, software, and theories for emergent 3-D and 4-D design in landscape architectural practice and research. Prereq: LDAR 6641. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 6641 Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6652 - Urban Design Seminar Topics (3 Credits)

Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with URBN 6652. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6655 - Urban Ecology (3 Credits)

This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with URPL 6547. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

LDAR 6670 - Plants in Design (3 Credits)

Explores the challenges, opportunities and responsibilities of designing with living, growing, and ever-changing organisms. Students learn to identify plants that are commonly used in the Colorado region and the principles, theories, methods, and techniques for planting design. Cross-listed with LDAR 4470. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6671 - Plant Material Identification (3 Credits)

Students learn the names, characteristics and site requirements of plants including trees, shrubs, ground covers and perennials commonly used in built works in the Colorado region. Methods are transferable to other regions. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6686 - Special Topics: Landscape Architecture (3 Credits)

Various topical concerns are offered in landscape architecture history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max hours: 21 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 21.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6706 - Advanced Landscape Architecture Design Studio Immersive I (4 Credits)

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel competent also required (LDAR 6707). Recommended: complete 2 previous landscape graduate studios or permission of department chair.

Coreq: LDAR 6707 and LDAR 6740 or LDAR 6745. Max hours: 4 Credits.

Grading Basis: Letter Grade

Coreq: LDAR 6707 and LDAR 6740 or LDAR 6745.

LDAR 6707 - Advanced Landscape Architecture Design Studio Immersive II (2 Credits)

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel anticipated. Recommended: complete 2 previous landscape graduate studios or permission of department chair. Co-req: LDAR 6706 and LDAR 6740 or LDAR 6745. Max hours: 2 Credits.

Grading Basis: Letter Grade

Co-req: LDAR 6706, and LDAR 6740 or LDAR 6745.

LDAR 6711 - Advanced Graphics Landscape Architectural (3 Credits)

Focuses on developing practical and applied expertise in various manual and digital visualization and representation techniques and media used for enhanced effectiveness in visual communication. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6712 - Green Roofs/Living Systems (3 Credits)

The primary objective for this seminar is to give students a general understanding of green roof systems, vegetated roofs above underground architecture and vertical vegetated systems. The seminar will engage in critiques and discussions using international, national and local case studies, covering history, typologies, function, design, master planning and costs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6720 - Finding Common Ground (3 Credits)

Focuses on principles and societal variables that influence the structure of urban neighborhood space through research application. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6722 - Contested Terrains (3 Credits)

Explores the different processes, factors and forces that determine and influence occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6723 - Cinema and the Landscape (3 Credits)

Explores the relationships between landscape and film through theoretical and practical investigations. Explores film's roles in understanding and investigating landscapes, their dynamic qualities and processes, and issues related to film's capacity to construct spatial meaning. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6724 - American Landscapes (3 Credits)

Historical, theoretical and critical evaluation of the development of American landscapes. May cover the economic, philosophical and social trends behind changes in the landscape as well as the intellectual and contextual changes to the theory and practice of landscape architecture. Prereq: LDAR 5521 Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6725 - Design Communications (3 Credits)

In this seminar students will learn research and writing skills to produce articles in clear, readable, and substantial prose, from academic criticism to general interest reviews; writing forms and styles, including essays, reports, award applications and writing for oral presentation; and editing basics. Prereq: History and/or theory of landscape architecture or architecture. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6735 - The Landscape of Food (3 Credits)

An examination of the reciprocal relationships between landscapes and patterns of food production, distribution, and consumption. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6740 - Advanced History/Theory Seminar - Immersive Semester (3 Credits)

Investigates topical issues in landscape architecture history/theory, process and methods within the framework of themes/issues running through the immersive semester course of study. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students.

LDAR 6741 - Urban Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar.

Restrictions: Restricted to Graduate level students in the college of Architecture and Planning. Cross-Listed with URBN 6641, LDAR 6741, and URPL 6398. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate Level students in the College of Architecture and Planning.

LDAR 6745 - Advanced Media/Technology Seminar - Immersive Semester (3 Credits)

Advances landscape architectural practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of this seminar aligned with the immersive studio core track. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students.

LDAR 6750 - Professional Practice (3 Credits)

Explores the essential elements of professional practice and equips students with the fundamental knowledge and skills requisite to understand and participate in this practice. Covers office organization, project management, contracts, professional ethics and non-traditional careers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6755 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with ARCH 6205 and URPL 6405. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6840 - Independent Study (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to landscape architecture or urban design. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDAR 6850 - GIS Capstone (3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to GIS. Serves as Capstone for LA GIS certificate. Permission of instructor required. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDAR 6910 - Teaching Assistantship (3 Credits)

Work with a faculty member in a course to assist with course preparation and delivery and learn teaching practices. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LDAR 6930 - Landscape Architecture Internship (3 Credits)

This experiential learning course provides students the opportunity to participate in and reflect on the practice of landscape architecture by working in a design office. Students will reflect on and critically analyze issues such as leadership, management and collaboration. Prerequisite: This course may only be taken once during a student's academic career and is to be taken after the first year of graduate study. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

LDAR 6949 - Research Tools & Methods (3 Credits)

Introduces students to research in landscape architecture and related fields and disciplines. Provides students with research practices, methods, and methodologies and a critical framework to identify suitable approaches based on diverse projects and contexts. Supports studio, independent study and thesis. Cross-listed with ARCH 6473. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6950 - Thesis Research (3 Credits)

Student works closely with a landscape architecture faculty advisor and thesis committee to develop the thesis through focused research. Research might entail both written and graphic inquiry leading to specific products with conclusive ideas setting the stage for final thesis. Prereq: LDAR 6949 and permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

LDAR 6951 - Landscape Architecture Thesis (6 Credits)

The Landscape Architecture thesis is expected to advance the field of landscape architecture by offering new insights into aspects of design, technology, history or professional principles. In this course, the student continues to work independently, but closely with a landscape architecture faculty advisor and thesis committee to complete the thesis. The thesis might take on different final forms (written volume, drawings, maps, digital images), depending on the subject inquiry. For further information on the Landscape Architecture Thesis Track consult the Landscape Architecture Thesis Guidelines. Prereq: LDAR 6949 and 6950. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Landscape Architecture, MLA

Interim Chair: Louise Bordelon

Email: louise.bordelon@ucdenver.edu

Introduction

The Master of Landscape Architecture (MLA) program balances theory and practice to prepare students to create health, well-being and environmental resilience through design in the public realm. Our fully accredited professional program takes full advantage of our location in the heart of Denver and the rapidly growing metro area. The program enables students to enter practice and offers distinctive opportunities for students to engage in meaningful projects that impact our communities and our built environment. We educate landscape architects to lead the design and planning process; successful graduates pursue diverse practices and occupations in public and private arenas around the world.

Our students study relevant issues through classes and immersive experiences that challenge them to think critically about the applications

and implications for the work we do. While grounded in design and professional skills, the curriculum is structured to fluidly address evolving concerns for our profession, our communities and our environment through topics such as health and well-being, water in the west, food systems, and emerging sustainable practices.

The Degree

The Master of Landscape Architecture (MLA) curriculum revolves around a sequence of design studios, supported by core content classes and a variety of seminar courses. We deliver a fully accredited Master of Landscape Architecture for first professional degree students and post-professional students (those already holding a Bachelor of Landscape Architecture or Bachelor of Architecture degree).

Our program balances theory and practice and emphasizes design to create health and well-being and environmental resilience through design in the public realm. The curriculum fosters an ethic of responsibility grounded in natural systems and processes and an understanding of cultural and community values. Students learn skills working on relevant urban and civic projects in both local and global contexts and at a variety of scales. Studios and courses engage current issues, define future trends, and explore the role of landscape architecture in a rapidly changing world. Throughout the program, our students learn and apply design and planning skills, approaches and technologies to enhance community, foster equity and environmental balance, conserve and regenerate resources, and create places that hold value for current and future generations.

Denver's vibrant professional design and planning community supports our students through guest lectures and participation in design reviews, internships and mentor programs, and opportunities to visit offices and meet practitioners and leaders in our fields.

Program Objectives

The department has developed five broad program objectives in support of our educational mission. These objectives identify what students should know and be able to do by the time they graduate and are linked to a series of measurable student learning outcomes. The five categories are:

- **Design:** Students will be able to formulate questions and arguments about landscape and its role as a significant cultural medium, and determine processes and practices that lead to transformative actions based on ethical, communicative and content knowledge criteria.
- **Communication and Representation:** Students will be able to create and employ appropriate representational media to effectively convey ideas on subject matter contained in the professional curriculum to a variety of audiences, and to articulate and convey ideas orally and in writing.
- **Professional Ethics:** Students will be able to critically evaluate local and global ramifications of social issues, diverse cultures, economic and ecological systems, and professional practice as guiding principles for design thinking and implementation.
- **Content Knowledge:** Students will be able to develop a critical understanding and application of the histories, theories and practices of landscape architecture and its role in reflecting and shaping culture and environments.
- **Research:** Students will be able to develop and apply a diligent, systematic and critical inquiry in support of design and scholarship.

Central Themes

The MLA program prepares students to address current and future problems and challenges in local, regional and global contexts. An issues-based approach ensures that students will be exposed to and participate in the development of new responses to emergent and ongoing crises and opportunities, emphasizing environmental and social justice as a key element for the design of livable, sustainable and resilient places and landscapes. Examples of this are deep in the department’s work over the past twenty-five years, with examples such as working for five years with the local community of the Lower 9th Ward in New Orleans addressing issues around recovery after Hurricane Katrina, and the Learning Landscapes program, which successfully redesigned almost 100 schoolyards in Denver, an initiative which is now focused on Jefferson County schools. Recently we have addressed issues of water, food scarcity and urban agriculture in Denver, the redesign and recovery of post-industrial sites and mining landscapes throughout the state, and issues of health and livability in marginalized and underserved communities and neighborhoods. Many of these projects have involved multiple courses over several years, and have made major impacts on the places and communities they have engaged. Students are immersed in interdisciplinary opportunities to not just learn, but to make meaningful change, and interact with community members and professionals from many different backgrounds and disciplines, gaining invaluable experience and skills in working and communicating in interdisciplinary teams.

BIG THINKING

We believe that the issues, challenges and opportunities landscape architects face are interrelated, spanning all scales from a small private yard to neighborhood to city to region to the world, and involve a wide range of social, cultural, ecological and economic systems, requiring critical and creative thinking that transcends scales and is cross-, trans- and interdisciplinary.

CRITICAL ISSUES

We strongly believe that Landscape Architecture is uniquely positioned to make major contributions to the big and urgent questions and issues that affect human and non-human systems. Climate change, resource scarcity, water and food are as critical as the design and building of landscapes and places that are about more than just sustainability and resilience and provide opportunities for people to thrive.

MEANINGFUL CHANGE

While the functioning and performances of human and non-human systems are critical, good design does more than just provide solutions to problems. It provides opportunities for people to interact with places over time, and it empowers them to understand the dynamics that affect their environments and to participate in the ongoing processes of changing place and changing communities, thus becoming authors and co-authors of the places they shape and inhabit.

Prerequisites

Students are expected to have achieved a basic level of computer literacy prior to enrolling in the first semester of classes. The department offers an Introductory Skills Workshop for students before classes begin that is particularly helpful for students who do not have a background in drawing or computer graphics. The workshop is scheduled each year prior to the beginning of fall semester.

Program Requirements

The landscape architecture program offers first professional and post-professional graduate courses leading to the degree Master of Landscape Architecture (MLA). The program is fully accredited by the Landscape Architecture Accreditation Board (LAAB) and recognized by the Council of Educators in Landscape Architecture (CELA).

- The first-professional degree program requires a six-semester sequence of course work totaling 90 semester hours.
- The post-professional degree program is for qualified students who have already earned a first professional degree in landscape architecture (BLA) or related discipline. It requires a minimum of 60 semester hours. Advanced standing is based on prior academic accomplishment.
- Students completing the College of Architecture and Planning’s BS Arch degree or an accredited undergraduate design degree at another institution may be given advanced standing in the three-year program. Advanced standing is based on prior academic accomplishment, and is evaluated on an individual basis upon acceptance into the program.

The curriculum consists of core and elective course work, including the integral (interdisciplinary) and the immersive semester.

Course Requirements (First Professional Degree)

(90-semester-hour MLA for students without a professional degree in landscape architecture or related professional field)

Code	Title	Hours
Design Studios		33
LDAR 5501	Landscape Architecture Design Studio 1	
LDAR 5502	Landscape Architecture Design Studio 2 ¹	
LDAR 5503	Landscape Architecture Design Studio 3	
LDAR 6604	Landscape Architecture Design Studio 4	
LDAR 6605	Landscape Architecture Design Studio 5	
LDAR 6706	Advanced Landscape Architecture Design Studio Immersive I	
LDAR 6707	Advanced Landscape Architecture Design Studio Immersive II	
LDAR 6607	Landscape Architecture Design Studio 7	
LDAR 6608	Landscape Architecture Design Studio 8	
History and Theory		12
LDAR 5521	History of Landscape Architecture	
LDAR 6620	Landscape Architecture Theory and Criticism	
LDAR 6949	Research Tools & Methods	
LDAR 6740	Advanced History/Theory Seminar - Immersive Semester ²	
	or LDAR 6749 Advanced Media/Technology Seminar - Immersive Semester	
Site Works		12
LDAR 5572	Landscape Ecology	
LDAR 5532	Landform Manipulation	
LDAR 6631	Landscape Construction Materials and Methods	
LDAR 6670	Plants in Design	
Media		9

LDAR 5510	Graphic Media in Landscape Architecture	
LDAR 5540	Introduction to GIS ¹	
LDAR 6641	Computer Applications in Landscape Architecture	
Critical Practice		6
LDAR 6630	Site, Society and Environment	
LDAR 6750	Professional Practice	
MLA Electives		9
9 hours of LDAR electives		
General Electives		9
9 hours of open graduate-level electives		
Total Hours		90

¹ Beginning with the fall 2021 cohort, LDAR 5540 Introduction to GIS will be a pre-requisite to LDAR 5502 Landscape Architecture Design Studio 2.

² Students are required to take either LDAR 6740 or LDAR 6745, dependent upon which course is offered in conjunction with LDAR 6706/LDAR 6707 in the semester in which they register in the Immersive curriculum.

Course Requirements (Advanced Professional Degree)

(60-semester-hour MLA for students with a professional degree in landscape architecture or related disciplines)

The curriculum typically requires 60 semester hours and two years of full-time study, with the Integral Studio in the fall of the first year, and the Immersive Studio and its concurrent courses in the fall of the second year. The core curriculum consists of four groups:

Code	Title	Hours
Design		24
History and Theory		9-12
Media		3-12
Electives		3-12
Total Hours		39-60

The department chair or associate chair will advise each student engaged in this program of study.

Thesis

The graduate thesis in landscape architecture provides an opportunity for students to conduct independent research and design investigations that demonstrate their capacity for rigorous original thinking. The thesis is not required for graduation and not all students are approved to write a thesis. Choosing to pursue a thesis project constitutes a significant commitment to the endeavor; the topic must be chosen with care and thoughtfully and critically developed. Topics can explore material that has been previously unstudied, reinterpret existing material in a new light, or engage research and design practices in ways that strengthen and define the final project. For all theses, the research and products must meet the highest standards of academic excellence and contribute significantly to the discipline and/or profession.

Pursuing a thesis requires students to enroll in a three-course sequence for a maximum total of 12 semester hours. Students are required to formulate their research proposals two full semesters prior to their enrollment for the 6-semester-hour thesis, typically taken in lieu of the

final studio. To proceed through the sequence, students must have completed and passed the research tools and methods class (LDAR 6949 Research Tools & Methods) and have secured departmental approval of the thesis proposal. The completion of the thesis is dependent on acceptance of the student's work by the faculty member acting as the thesis chair and by the committee. For work to be accepted it must meet the standards established by the University of Colorado Denver for graduate thesis projects.

Dual Degree and Certificate Options

Students may enroll in a dual degree program with Architecture (MARCH) or Urban and Regional Planning (MURP).

Students may apply to the Overlapping Degree Option for the one-year (36 credit) Master of Urban Design (MUD) degree.

A certificate in Geospatial Information Science (GIS) for Landscape Architecture is also available to students interested in pursuing geospatial design.

Course Sequence (First Professional Degree)

(90-semester-hour MLA for students without a professional degree in landscape architecture or related professional field)

The curriculum consists of core and elective course work, including the integral (interdisciplinary) and the immersive semester.

Typical 90-semester-hour sequence of courses for the first professional MLA degree (subject to change)

Course	Title	Hours
First Year		
Fall		
LDAR 5510	Graphic Media in Landscape Architecture	3
LDAR 5521	History of Landscape Architecture	3
LDAR 5572	Landscape Ecology	3
LDAR 6631	Landscape Construction Materials and Methods	3
LDAR 6641	Computer Applications in Landscape Architecture	3
Hours		15
Spring		
LDAR 5500	Introductory Landscape Architecture Design Studio	3
LDAR 5532	Landform Manipulation	3
LDAR 5540	Introduction to GIS ¹	3
LDAR 6620	Landscape Architecture Theory and Criticism	3
LDAR 6630	Site, Society and Environment	3
Hours		15
Second Year		
Fall		
LDAR 5502	Landscape Architecture Design Studio 2 (Integral Studio) ¹	6
LDAR 6949	Research Tools & Methods	3
LDAR 6670	Plants in Design	3

MLA Elective or Open Elective		3
Hours		15
Spring		
LDAR 5503	Landscape Architecture Design Studio 3	6
LDAR 6604	Landscape Architecture Design Studio 4	3
LDAR 6605	Landscape Architecture Design Studio 5	3
MLA Elective or Open Elective		3
Hours		15
Third Year		
Fall-Immersive		
LDAR 6706	Advanced Landscape Architecture Design Studio Immersive I (travel may be required)	4
LDAR 6707	Advanced Landscape Architecture Design Studio Immersive II	2
LDAR 6740 or LDAR 6745	Advanced History/Theory Seminar - Immersive Semester ² or Advanced Media/Technology Seminar - Immersive Semester	3
LDAR 6750	Professional Practice	3
MLA Elective or Open Elective		3
Hours		15
Spring		
LDAR 6607	Landscape Architecture Design Studio 7	3
LDAR 6608	Landscape Architecture Design Studio 8	3
	OR LDAR 6951 (with Chair approval)	
MLA Elective or Open Elective		3
MLA Elective or Open Elective		3
MLA Elective or Open Elective		3
Hours		15
Total Hours		90

¹ Beginning with the fall 2021 cohort, LDAR 5540 Introduction to GIS will be a pre-requisite to LDAR 5502 Landscape Architecture Design Studio 2.

² Students are required to take either LDAR 6740 or LDAR 6745, dependent upon which course is offered in conjunction with LDAR 6706/LDAR 6707 in the semester in which they register in the Immersive curriculum.

Urban and Regional Planning

Chair: Austin Troy

Office: CU Denver Building 330F

Telephone: 303-315-1000

Fax: 303-315-1050

Overview

The Master of Urban and Regional Planning (MURP) at the University of Colorado Denver, the only accredited graduate planning degree in the state of Colorado, has evolved to become one of the strongest, most unique graduate planning programs in the United States, offering a real-world, experientially oriented program that uses Colorado as a classroom and engages students with planning professionals and the community.

We believe that successful city-building requires expertise, breadth, interdisciplinary understanding, and creativity. Our program looks beyond traditional professional silos and instead centers on issues at

the forefront of planning practice. Our three program Pillars—Healthy Communities, Equitable Urbanism, and Regional Sustainability—form the basis of our research, instruction, and community outreach. We encourage all students to follow their passion and develop expertise in the areas that matter most to them. Our unique, self-directed curriculum allows students to understand the breadth of the planning field while gaining the technical expertise demanded by the profession.

Our program faculty includes some of the most respected researchers and educators in the planning field, as well as top local planning practitioners, all of whom bring a wealth of experience to the classroom. All of our faculty make teaching a top priority.

Our presence in a College of Architecture and Planning ensures that our approach to planning education has a strong connection to design, and our location in the heart of downtown Denver presents our students with endless opportunities to learn what it takes to create amazing cities.

Our Faculty

The faculty of the Department of Urban and Regional Planning consists of a purposeful mix of full-time tenured/tenure-track faculty, full-time clinical-track faculty, and a diverse group of part-time lecturers who keep one foot in the professional practice of planning and one in the classroom. The MURP program and its students benefit from the rich contributions of the scholarly research accomplished by our tenured/tenure-track faculty, and the practice-oriented instruction provided by our clinical faculty, lecturers and instructors. To learn more about our MURP faculty members, please visit the College of Architecture and Planning website.

Our Students

Our commitment to our students extends across many areas: providing them with exceptional instruction and research-backed knowledge about planning; inspiring them to achieve great things in their personal and professional lives; exposing them to planning professionals, real-world planning situations, and state-of-the-art learning resources; and helping them choose their best academic and career paths through advising and mentoring.

Advising

Roxy New serves as the MURP Academic Advisor and Course Coordinator on the College staff. She maintains MURP student records and is knowledgeable about academic policies and forms. Roxy can help students with registering for classes and ensuring graduation requirements are being met. Contact Roxy at roxy.new@ucdenver.edu or 303-315-0343.

The Planning faculty are also an important advising resource for MURP students. They enjoy discussing with students specific course content, career advice, and any other issues relating to the MURP curriculum, academic achievement, extracurricular activities, or urban and regional planning in general. We have an “open door” policy on advising, which means students may select a single faculty advisor to work with consistently, or have multiple faculty advisors. Students choose faculty advisors based on their expertise in a particular area of interest (see list below) or other criteria. Students may work with their faculty advisor as much or as little as they need.

MURP program planning forms, as well as dual degree planning forms, are available on the college website to help students keep track of the courses they have taken and plan to take. Dual degree students will have

an advisor in each relevant department or college. Electronic Degree Auditing is available for all MURP students. This online system allows students to check which degree requirements they have satisfied and which ones remain. Instructions for accessing the degree audit are available in the Electronic Degree Auditing Info document available on the college website.

The following list offers suggestions for which faculty members to consult with regarding different areas of interest or expertise:

- **Carrie Makarewicz:** Community development, sustainable economic development strategies, transport equity, regional planning, urban school reform, real estate development
- **Manish Shirgaokar:** Transportation planning, transportation equity, travel behavior, GIS and spatial analysis,
- **Jeremy Németh:** Placemaking and urban design, urban politics, land use planning, land use conflict, politics of public space, environmental justice, thesis and research
- **Ken Schroepel:** Urban development and revitalization, urban form, planning methods, planning history of Denver, professional engagement and networking, careers in planning
- **Jennifer Steffel Johnson:** Affordable housing, housing policy, social justice, diverse communities, community development, public engagement, internships
- **Austin Troy:** Land use policy, environmental planning, urban green infrastructure, GIS, spatial analysis, regional sustainability

Programs

- Urban and Regional Planning, MURP (p. 157)

Dual Degrees

As part of encouraging among planners an appreciation for and a knowledge of the perspectives and practices of the other disciplines that participate in planning and city-building, we offer several dual degree opportunities, both with programs within the College of Architecture and Planning and with other units across the University of Colorado system. In every instance, the total credit requirement of the Dual Degree is considerably less than would be needed if each degree were independently pursued. The degrees that may be combined with the Master of Urban and Regional Planning include:

- Master of Architecture (MURP+MARCH)
- Master of Landscape Architecture (MURP+MLA)
- Master of Public Health (MURP+MPH)
- Master of Public Administration (MURP+MPA)
- Master of Business Administration (MURP+MBA)
- Master of Science in Historic Preservation (MURP+MSHP)
- Master of Engineering - Transportation Systems (MURP+MENG)
- Master of Applied Geography/Geospatial Sciences (MURP+MA-AGGS)
- Juris Doctorate (Law Degree) (MURP+JD in collaboration with the CU Boulder Law School)

Information about the dual degrees can be found on the College of Architecture and Planning website.

Faculty

Professors:

Nan Ellin, PhD, Columbia University
Austin Troy, University of California, Berkeley
Jeremy Nemeth, PhD, Rutgers University
Carrie Makarewicz, PhD, University of California, Berkeley

Associate Professors:

Manish Shirgaokar, PhD, University of California, Berkeley

Assistant Professors:

Ken Schroepel, MURP, University of Colorado Denver
Jennifer Steffel Johnson, PhD, University of Colorado Denver

Urban and Regional Planning (URPL) Courses

URPL 5000 - Planning History and Theory (3 Credits)

This course offers a comprehensive review of the major historical and theoretical developments in planning; the human aspects of planning as a social, political, and community-oriented process; public engagement; social justice; planning leadership and advocacy; and the future of planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5010 - Planning Methods (3 Credits)

This course focuses on the most commonly applied quantitative and qualitative methods used in planning; data organization and management principles; and various ways to collect, analyze, and communicate data as a fundamental component of the planning process. Cross-listed with GEOG 4000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5020 - Planning Law and Institutions (3 Credits)

This course covers the legal basis for planning; the evolution of planning law through a comprehensive review of landmark court decisions; and the types and hierarchies of governments, their powers and relationships, and how planning operates within those governmental contexts. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5030 - Planning Practice and Technology (3 Credits)

This course offers a comprehensive survey of planning practice; types of planning positions and employers; business aspects of planning; planning ethics; and professional/career development in planning. Introductory instruction is provided in Adobe Illustrator, Photoshop, and InDesign, and ESRI ArcGIS Pro. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5040 - Urban Sustainability (3 Credits)

Examines the interface of the natural and social realms in cities. Topics include the environmental history of cities; the causes, environmental impacts and mitigation of sprawl; urban green infrastructure; and best practices in planning environmentally sustainable cities and suburbs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5050 - Urban Development (3 Credits)

Explores the procedures, policies and politics of planning and real estate development. Topics include the relationship between planning goals and regulations; real estate development and finance; land division, entitlement, and regulation; site planning and development review; and public infrastructure. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5060 - Planning Workshop (6 Credits)

An introduction to the studio environment, this course provides students with experience and knowledge/skills development in physical planning and design, the planning process, plan making, and collaborative planning, plus introductory instruction in GIS and SketchUp. Prereq: 9 hours of URPL Core Coursework. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: 9 hours of URPL Core Coursework (URPL 5000, 5010, 5020, 5030, 5040, 5050).

URPL 6000 - Planning Project Studio (6 Credits)

This studio course requires student teams to complete a substantial planning project using a comprehensive set of knowledge/skills for real-world clients. Five focus area options offered annually: Healthy Communities, Urban Revitalization, Regional Sustainability, International Experience, and Summer in Colorado. Prereq: URPL 5060 or 6630. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5060 or 6630 Restriction: Restricted to majors within the College of Architecture and Planning

URPL 6200 - Land Development Regulations (3 Credits)

This course provides a comprehensive exploration of the various components of land development regulation, including preliminary plats; general/final development plans; zoning; PUDs; variances; site plan/development review; land use regulators; regulatory processes. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6205 - Plan Making (3 Credits)

This course offers a broad overview of the various types of plans and the specific processes involved in their creation, including comprehensive plans; rural/small town plans; corridor plans; small area plans; campus/institutional plans; special plans. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6210 - Planning Engagement (3 Credits)

This course focuses on roles and methods of public engagement in planning. Topics include planning advocacy; public meetings; public engagement techniques; diverse publics; controversial planning topics; mediation. Restriction: Restricted to Graduate Urban and Regional Planning students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate Urban and Regional Planning students.

URPL 6215 - Analyzing the Built Environment (3 Credits)

This course explores various means and techniques used to analyze and characterize the built environment, including land division and development measures; urban morphology; and analyzing the spatial attributes of cities and regions at varying scales and perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6220 - Advanced Research Techniques (3 Credits)

This course offers an in-depth look at a variety of research principles and techniques, including advanced qualitative and quantitative data collection; survey design; sampling; probability distributions; hypothesis testing; inferential statistics; other topics associated with scholarly research. Prereq: URPL 5040 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5040

URPL 6225 - Urban Policy Analytics (3 Credits)

This course teaches quantitative analysis techniques to answer questions about Planning. Topics include population/economic forecasting, analysis of census data, research design, and survey design. Relying on the software R, students learn how to manage datasets

and run bivariate/multivariate statistical analysis. Prereq: URPL 5010 - Planning Methods or instructor's permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5010 or Instructor's permission.

URPL 6249 - Project Management (3 Credits)

Introduces the knowledge and skills of Project Management (PM) in a business environment. Emphasis will be on the entire project life cycle, the project management process groups and the knowledge areas as presented in the Project Management Body of Knowledge (PMBOK), from the Project Management Institute (PMI). Managerial aspects, quantitative tools, and traditional techniques of Project Management will be covered. A variety of projects will be examined. Note: Cannot receive credit for both DSCI 6820 and BUSN 6820. Cross-listed with BANA 6650. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6250 - GIS for Urban Planning (3 Credits)

This course is a detailed introduction to GIS that focuses on spatial analytics for Urban Planning using vector and raster data. Aimed at professionals and researchers, this course includes advanced ArcGIS applications and tools, and innovations in geo-spatial data analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6255 - Emerging Planning Technologies (3 Credits)

This course explores the rapid pace of innovation in planning-related technologies and offers a comprehensive review of the latest web-based and mobile applications, and new technologies used in virtual participation/engagement, data collection/visualization, social media/crowdsourcing, and geo-spatial data collection and analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6260 - Advanced Geo-Spatial Methods (3 Credits)

Students will be introduced to the hardware, software, theory, and skills required to use Geographical Information Systems (GIS). In this course, students will learn how to use GIS software to manage, analyze, map, and present spatial data to support the planning and design processes. Prereq: An introductory GIS class is required before taking this class. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6265 - Visualization for Planning (3 Credits)

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling infographics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales. Restriction: Restricted to graduate level MURP and MUD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate level MURP and MUD students.

URPL 6300 - Community and Environmental Health Planning (3 Credits)

A place-based approach to understanding the social, economic, environmental, and political factors that influence individual and community health with a focus on reducing health disparities. Covers policies, practices, data, and methods for healthy communities planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6305 - Healthy Community Assessments (3 Credits)

This course focuses on defining, organizing, and conducting Health Impact Assessments, health measures, policies, best practices, and other types of studies and analyses related to the link between the built environment, public health, and healthy communities. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6310 - Community Food System Planning (3 Credits)

Healthy communities require sustainable local and regional food systems. This course examines how communities can collaboratively develop and implement programs, processes and practices that help ensure food security and equitable access to healthy food options for all populations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6349 - Global Health Studies II (3 Credits)

Global Health Studies II: Comparative Health Systems. The course has three parts: (1) examines the social and cultural construction of sickness, systems of etiology cross culturally, the therapeutic encounter, varying roles of healer and patient, and the cultural basis of all healing systems; (2) considers health systems in the context of global health reform, and the history, organization, and roles of institutions of global health governance; and (3) considers the interrelationship of health, foreign policy and global security. Cross-listed with PBHL 4020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6350 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with ARCH 6270, URBN 6525, and LDAR 5530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6355 - Urban Redevelopment Strategies (3 Credits)

This course focuses on the best practices and strategies used to help revitalize urban areas. Topics include urban infill development; TODs; adaptive reuse; historic preservation; design review; parking; public spaces; brownfield/grayfield redevelopment; culture/tourism; special districts; incentives/funding; and revitalization policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6360 - Urban Infrastructure (3 Credits)

This course provides a comprehensive exploration of transit planning, including transit planning fundamentals; transit routes and systems; transit modes and technologies; ridership modeling; scheduling; operations; funding; policies and regulation; relationship to land use; and facilities/design requirements. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6365 - Parks and Public Spaces (3 Credits)

This course offers a focused look at the role of parks and public spaces in the development and activation of cities; their designs, qualities, and components; management /operations; funding; policies; equal access; role as community and economic development tool. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6370 - Sprawl and Growth Management (3 Credits)

This course addresses causes of sprawl (large lot zoning, highway subsidies, suburban amenities, taxes and municipal services), social and environmental consequences of sprawl, anti-sprawl growth management policies, open space preservation methods, and retrofitting suburbs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6395 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Restriction: Restricted to graduate level students. Cross-listed with URBN 6625 and ARCH 6261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URPL 6396 - Urban Design and Environment (3 Credits)

Provides an understanding of the inextricable relationship between urban design and the natural environment. Students learn how to design sustainable public spaces, promote environmental resilience, combat climate change, and foster environmental justice and healthy communities through urban design. Restriction: Restricted to Graduate level students. Cross-listed with URBN 6650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6397 - Design Policy, Process, and Regulation (3 Credits)

Explores the many design regulations that shape the urban form, how they are created and evolve, and how they impact design ideation, analysis, and communication using real-world scenarios to experiment with and test iterative design processes and techniques. Cross-listed with URBN 6550. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6398 - Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Cross-listed with URBN 6641 and LDAR 6741. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6399 - Sustainable Urban Infrastructure (3 Credits)

Focuses on developing uniform vocabulary on sustainable infrastructure across science & technology, architecture & planning, public policy, and health & behavioral sciences. Students learn concepts, principles/ pathways and evaluation techniques for promoting the diffusion of sustainable urban infrastructures. Cross-listed with CVEN 5460. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6400 - Community Development (3 Credits)

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with ARCH 6256. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6405 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and ARCH 6205. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

URPL 6410 - Social Justice in Planning (3 Credits)

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with LDAR 6637 and ARCH 6258. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6449 - Urban Social Problems (3 Credits)

Examines local government from the perspective of sociology and group dynamics. Course could include some or all of the following subjects: neighborhoods and community groups, class and race relations, community crime, social service issues, immigration, the underclass in American society, and related urban social problems. Cross-listed with PUAD 7628. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6450 - Urban Economic Analysis (3 Credits)

This course introduces students to the fundamentals of urban, land, and transportation economics, covering topics such as land markets, environmental regulation, infrastructure and service finance, impact fees, land value capture, pricing incentives, decision analysis, and cost-benefit analysis. Restriction: Restricted to graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6455 - Real Estate Development and Finance (3 Credits)

The course offers a detailed analysis of the real estate development process, its relationship to the planning/design profession, and financial aspects of real estate development including measures of value, capitalization rates, capital budgeting, debt and equity markets and taxation. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6460 - Green Real Estate Development (3 Credits)

This course offers an exploration into the principles, designs, policies, and best practices relating to sustainable real estate development. Topics include infill development; transit-oriented development; LEED-ND; green buildings; universal design; mixed-income projects; and net-zero developments, among others. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6499 - Preservation Theory and Practice (3 Credits)

Philosophical questions in preservation practice; balancing significance in the environment with natural decay and demands for change. Policy issues as well as preservation and adaptation design. Cross-listed with HIPR 6010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6500 - Environmental Planning/Management (3 Credits)

This course addresses issues related to planning under major environmental laws, ecosystem service-based management, urban green infrastructure, urban watershed and river management, urban forest and parks planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6505 - Enviro. Policy & Regulation (3 Credits)

This course focuses on the important field of environmental policy and regulation, including topics such as the National Environmental Policy Act (NEPA); environmental justice; environmental law; land use conflicts; contamination/remediation; environmental regulators; and regulatory policies and enforcement. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6510 - Energy/Natural Res. Planning (3 Credits)

This course provides an overview of the issues associated with energy and natural resource planning. Topics include: energy policy; alternative energy development; water resources; extraction/mining; natural resource protection and regulation; resource management, policies, politics, and technologies. Cross-listed with GEOG 4260. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6515 - Sustainable Planning & Design (3 Credits)

This course takes a comprehensive look at the principles of sustainable planning and design. Topics include: sustainability defined; measuring sustainability; sustainable planning/practices; sustainable design; LEED and other sustainability programs and organizations; environmental quality; sustainability advocacy. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6547 - Urban Ecology (3 Credits)

This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with LDAR 6655. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

URPL 6548 - Defining & Measuring Sustainability (3 Credits)

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Fieldwork applies both tools to cities in Colorado. Cross-listed with CVEN 5461. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6549 - Environmental Impact Assessment (3 Credits)

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Prereq: URPL 5530 or permission of instructor. Cross-listed with GEOG 4220, 5220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6550 - Transportation Planning/Policy (3 Credits)

This course examines policy issues in urban transportation planning: how transportation system design and political/institutional contexts shape transportation decision-making; major modes of urban transportation; and the social, environmental, economic, energy, and health impacts of transportation systems. Cross-listed with GEOG 4670. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6555 - Transportation, Land Use, and the Environment (3 Credits)

This course teaches how current transportation modes shape regions and how future transportation technologies might impact us. Topics include policy making and governance; land use interactions with transportation investments; climate change and resilience; energy use; environmental justice; and equity considerations. Restriction: Graduate level students. Cross-listed with GEOG 4630. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6560 - Transit, Pedestrian, and Bicycle Planning (3 Credits)

This course provides a comprehensive exploration of how to plan and design infrastructure for transit, walking, and bicycling. Topics include user characteristics, data needs, technical design aspects, coalition formation, and marketing. The course also introduces first-/last-mile issues, micro-mobility, and mobility-as-a-service. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6565 - Pedestrian & Bicycle Planning (3 Credits)

This course provides a detailed focus on the unique planning issues and factors involved with bicycle and pedestrian modes of transportation, including pedestrian/bicycle planning fundamentals; routes and systems; facilities and design requirements; funding; maintenance and operations; policies; and best practices. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6598 - Traffic Impact Assessment (3 Credits)

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Cross-listed with CVEN 6512. Restriction: Graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URPL 6599 - Sustainable Transportation Systems (3 Credits)

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Cross-listed with CVEN 5633. Restriction: graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URPL 6600 - Regional Growth and Equity (3 Credits)

Explores the institutions, policies, laws and funding that support planning for housing, transportation, infrastructure, air quality, and job creation at the metropolitan scale. Students will learn analytic techniques to study the labor market, economic growth and performance, commuting patterns, etc. Restriction: Restricted to graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6605 - Regional Economic Systems (3 Credits)

This course offers a comprehensive investigation into regional economic systems; metropolitan economies; regional economic development; regional market assessment; job generation; taxes/spending; and fiscal/economic policies and impacts at the metropolitan, regional, and statewide scale. Cross-listed with GEOG 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6610 - Planning Sustainable Suburbs (3 Credits)

This course takes a detailed look at the unique characteristics, issues, and challenges associated with planning and retrofitting automobile-oriented suburban communities and the opportunities for development of new communities using sustainable planning and design principles. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6615 - Small Town, Rural, and Tourism Planning (3 Credits)

This course investigates issues and challenges associated with rural, small town, and tourism planning including farmland conservation, growth management, sustainable food systems, economic development, and revitalization. It reviews global trends, national policies, and local planning processes through case studies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6620 - Tourism and Resort Planning (3 Credits)

This course investigates the unique aspects associated with planning and developing sustainable tourism infrastructure. Topics include: eco-tourism; historic tourism; cultural tourism; urban tourism; sports and recreation planning; regional tourism planning; and sustainable resort planning and development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6625 - Sustainable Planning for Tourism and Small Towns (3 Credits)

This course is about sustainably planning for tourism-dependent communities, particularly small towns. It focuses on the impacts of tourism on fragile cultural and ecological environments and addresses how to assess impacts, mitigation approaches and tools, and communication with the public. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6645 - Disaster/ClimateChangePlanning (3 Credits)

Introduces students to concepts and debates that shape disaster and climate change studies. Features case studies of disaster and climatic issues affecting Colorado and the Rocky Mountain region. Looks specifically at how planning can reduce risk and increase local resilience.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6650 - International Development Planning: Theory and Practice (3 Credits)

This course examines key development issues and planning approaches in cities of the Global South. Topics include: development theory; legacies of colonial urbanisms; actors and institutions in development; urban informality; water and sanitation; housing and land tenure; and climate change, among other topics. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6655 - Comparative International Planning (3 Credits)

This course investigates the global dimensions of planning, including a survey of global planning issues; a comparative analysis of planning philosophies, policies, techniques and approaches used throughout the world; and international planning coordination and organizations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6675 - International Field Research: Methods and Analysis (3 Credits)

This course will teach students the fundamentals of data collection, analysis, and dissemination in an international - and mostly developing world - context. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

URPL 6800 - Special Topics: Urban and Regional Planning (3 Credits)

Various topical concerns are offered in urban and regional planning, theory, concepts, methods, case studies and practice. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

URPL 6805 - Planning Internship (3 Credits)

Designed to provide professional practice experience in urban and regional planning. The emphasis is on actual work experience in settings with client groups as the students assist them in determining solutions to their problems. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URPL 6810 - Independent Study: URPL (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban and regional planning. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URPL 6850 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and LDAR 6470. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to majors within the College of Architecture and Planning

URPL 6900 - Planning Capstone (6 Credits)

Planning Capstone A requires students to identify an independent study/ small group project of their choosing and develop a detailed plan to complete the project. Prereq: URPL 6000 or instructor consent. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URPL 6000 Restriction: Restricted to MURP graduate majors within the College of Architecture and Planning

URPL 6920 - Planning Thesis A (3 Credits)

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part A provides instruction for proper thesis research, analysis, and writing while students develop a detailed work plan and begin their research. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

URPL 6925 - Planning Thesis B (3 Credits)

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part B includes the completion of the research and the thesis document, and presentation of the project to the student's thesis committee. Prereq: URPL 6920. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: URPL 6920.

Additional Information: Report as Full Time.

URPL 6940 - Teaching Assistantship (3 Credits)

Work as teaching assistant, mentored by the class instructor. Assist with curriculum delivery and development and grading of assignments while learning about pedagogical methods. This is intended for students who may be considering a career in teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

Urban and Regional Planning, MURP

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Overview

The Master of Urban and Regional Planning (MURP) at the University of Colorado Denver, the only accredited graduate planning degree in the state of Colorado, has evolved to become one of the strongest, most unique graduate planning programs in the United States, offering a real-world, experientially oriented program that uses Colorado as a classroom and engages students with planning professionals and the community.

We believe that successful city-building requires expertise, breadth, interdisciplinary understanding, and creativity. Our program looks beyond traditional professional silos and instead centers on issues at the forefront of planning practice. Our three program Pillars—Healthy Communities, Equitable Urbanism, and Regional Sustainability—form the basis of our research, instruction, and community outreach. We encourage all students to follow their passion and develop expertise in the areas that matter most to them. Our unique, self-directed curriculum allows students to understand the breadth of the planning field while gaining the technical expertise demanded by the profession.

Our program faculty includes some of the most respected researchers and educators in the planning field, as well as top local planning practitioners, all of whom bring a wealth of experience to the classroom. All of our faculty make teaching a top priority.

Our presence in a College of Architecture and Planning ensures that our approach to planning education has a strong connection to design, and our location in the heart of downtown Denver presents our students with endless opportunities to learn what it takes to create amazing cities.

Curriculum

The total number of credit hours required to earn the Master of Urban and Regional Planning (MURP) degree is 54. Required core courses, including two studio-format courses and a final capstone or thesis project, comprise 36 of these credits. Students complete an additional 18 credits of elective courses of their choice, including one course that is an advanced skills/methods elective.

Across those 54 credits, students must also meet final course grade minimums and cumulative grade point average requirements (see *the*

GPA Requirements and Grading Policy tab on the Curriculum section of our website) in order to earn the MURP degree. The required 54 credits may be reduced in some cases for students who meet the requirements for advanced standing or who have transfer credits (see *the Advanced Standing Credit Waiver* tab on our website). Full details of program requirements can be found in the MURP Student Handbook, posted under the Curriculum section of the program web page.

New students typically begin the program of study in the fall semester. Full-time students typically take approximately 12 semester hours per semester; taking more than 15 per semester is generally ill-advised.

Core Courses

The MURP Program curriculum includes 10 required "core" courses totaling 36 semester hours. These courses provide students with a comprehensive survey of the planning field and the foundational knowledge, skills, and values important to the profession. The core courses have been carefully designed to fully comply with the Planning Accreditation Board's required educational outcomes. The list below shows the core courses and the program year in which the course is suggested to be taken.

Code	Title	Hours
URPL 5000	Planning History and Theory	3
URPL 5010	Planning Methods	3
URPL 5020	Planning Law and Institutions	3
URPL 5030	Planning Practice and Technology	3
URPL 5040	Urban Sustainability	3
URPL 5050	Urban Development	3
URPL 5060	Planning Workshop	6
URPL 6000	Planning Project Studio	6
<i>Students choose of ONE of the following 6-credit courses:</i>		
URPL 6900	Planning Capstone	6
or URPL 6920 & URPL 6925	Planning Thesis A and Planning Thesis B	
Total Hours		36

Elective Courses

Beyond the core curriculum, MURP students follow a self-directed educational path. Students may choose any combination from our broad offering of elective courses. In addition, numerous other electives applicable for MURP credit are available through our allied programs within the college (Architecture, Urban Design, Historic Preservation, and Landscape Architecture) and through cross-listed courses offered by other CU Denver programs, such as Public Affairs, Geography, and Business. MURP students may take two of their six elective courses entirely outside of the MURP department, as long as the courses are relevant to the student's interests in planning.

Potential Specializations

Through our self-directed elective curriculum, students have the ability to craft a MURP degree suited to their career goals and personal interests. Students may choose any combination of elective courses, whether oriented towards a traditional planning field such as "Transportation Planning," a customized emphasis on a unique planning niche, or a general survey of diverse planning topics (i.e. no specialization at all). Students are not required to identify or pursue any type of planning specialization unless they want to (specializations do not appear on

transcripts). Ultimately, students may choose whichever combination of elective courses they desire.

The most helpful resource for assisting students in choosing their self-directed path through the MURP program is the planning faculty, all of whom are happy to provide advice about which electives to take or any topic relating to the MURP program or careers in planning. For more information, see the Advising section of the website.

Independent Study

Independent Study is a student self-directed learning experience with faculty oversight, guidance, and evaluation. Independent Study offers students an important opportunity to engage in research or creative activity in an area of inquiry not offered through regular courses, or in greater depth than offered in regular courses. An Independent Study course should not duplicate courses that are traditionally offered at the university; rather, it is intended to be a truly independent exploration of a topic or a project of a special nature.

Students who undertake Independent Study are expected to be self-motivated and largely self-directed. MURP students wishing to undertake an Independent Study must have a grade point average of 3.0 or greater in the MURP program. Students can apply a maximum of one three-credit Independent Study course towards their MURP degree. (However, under special circumstances, and with departmental approval, students may be able to take two Independent Study courses.)

Students must secure a faculty advisor for their Independent Study course. The faculty member's expertise and availability should be appropriate for the topic of study and the student's learning objectives. Faculty members reserve the right to decline to be an Independent Study advisor. Only full-time Department of Urban and Regional Planning faculty members may officially serve as a MURP Independent Study advisor. Adjunct faculty members and faculty in other departments may serve as co-advisors, but the instructor of record (i.e., grader) must be a full-time MURP faculty member. Students are encouraged to consult with other faculty and/or professionals as part of their Independent Study, but the faculty Independent Study advisor is responsible for evaluating the project and providing the majority of advising.

A MURP Independent Study project should have a focus within the field of Urban and Regional Planning, although it may be of an interdisciplinary nature. The Independent Study deliverables should be sufficient to evaluate the student's level of learning and mastery of the chosen topic. Independent Study will be graded with a letter grade and is subject to MURP, CAP, and CU Denver grading and academic policies. The project specifics are to be provided by the student in the Independent Study Proposal and approved by the student's Independent Study faculty advisor. A document with complete Independent study guidelines, including enrollment process, is available upon request from the Chair or Associate Chair.

Students should expect to devote a minimum of nine hours per week during the fall or spring semester, and 18 hours per week during the summer semester, for a three-credit Independent Study course. Students are expected to meet periodically with their Independent Study faculty advisor throughout the semester, and the student and advisor should agree on project milestones and a meeting schedule.

To begin an Independent Study, students are responsible for developing a study proposal, approaching and gaining approval from the faculty member with whom they would like to work, completing the enrollment form and getting it signed and submitted, and registering for the

Independent Study course. Specifically, the process includes the following steps:

- Prior to the semester in which the Independent Study is to be completed, the student drafts an Independent Study Proposal.
- Prior to the start of the semester, the student approaches and gains approval from a full-time MURP faculty member to be their Independent Study course advisor (note guidelines above).
- The student works with their faculty advisor to refine the Independent Study Proposal. The proposal must be completed and approved by the faculty advisor no later than the end of the first week of the semester.
- The student completes and signs the Special Processing Form, has it signed by their Independent Study faculty advisor, and turns it in to their academic advisor no later than the end of the second week of the semester (the add/drop deadline).
- Student registers for the Independent Study course (URPL 6810) no later than the add/drop deadline.

Internships

Internships are an important way the MURP program helps students learn experientially. The difference between an internship and a part-time job is that an internship is specifically intended to be a learning experience. While getting academic credit for an internship is not required, it is highly recommended. Students earn three elective credits for enrolling in URPL 6805 Planning Internship but, more importantly, the coursework enables students to maximize the personal and professional development their internship affords. Internship opportunities will be posted for MURP student to review as they are received from employers in the area. Students are also encouraged to pursue internship opportunities on their own through networking with planning professionals and reaching out directly to planning-related organizations. More detailed information on internships is available in the MURP Student Handbook. Students should register on Handshake, the online career system used by the university, to find and be notified available internship and career positions. More information on Handshake is available on the college website.

Planning Workshop/Project Studio

URPL 5060 Planning Workshop and URPL 6000 Planning Project Studio are the two studio core courses. These courses are a key part of the hands-on, real-world focus of the MURP program.

Planning Workshop is the introductory studio for MURP students. It provides students an opportunity to address actual planning problems, issues, and processes; apply previously acquired knowledge and skills; and develop new knowledge and practical skills in an applied context.

Students will develop basic competence in accessing existing information, generating new information, and performing planning analysis and synthesis. Students will also learn to enhance their graphic, written, and oral communication capabilities. Through the Planning Workshop experience, students will develop an understanding of the relationship between planning theory and practice, as well as gain the ability to formulate compelling planning arguments in applied settings.

Students will also receive introductory instruction in Geographic Information Systems (ESRI ArcGIS) and Trimble SketchUp, which complement the introductory instruction in Adobe Creative Cloud (Photoshop, Illustrator, InDesign) students receive in the Planning Practice and Technology course. The integration and use

of all of these common planning technology applications is a critical component of the Planning Workshop experience.

Planning Project Studio is the MURP program's advanced studio course and is offered in the fall and summer semesters. This studio requires students to work together as a "planning consultant team" to complete a single planning project or study from beginning to end for a real-world client. It is expected that students enrolled in Planning Project Studio will have already gained the fundamental planning knowledge, skills, and values from their experience in Planning Workshop and other MURP courses. Consequently, the emphasis in Planning Project Studio is on putting everything together into a complete real-world planning project. The project locations and clients vary. In the fall semester, projects are commonly located in Denver; travel-based summer studios are offered in international locations and in communities across Colorado.

The studio will emulate the typical planning consultant/client experience, including: refining the project scope and schedule with the client; establishing guiding principles and expected outcomes; conducting case studies and existing plans background research; gathering and analyzing existing conditions data; formulating alternative plan concepts; assessing alternative concepts through specific criteria; identifying and refining the preferred alternative; and preparing and presenting the final plan deliverables to the client. Emphasis is also placed on professionalism, project management, team-building and collaboration, client management, public involvement, and other aspects of the real-world planning consultant realm.

Planning Capstone/Planning Thesis

The culminating component of the MURP curriculum is the Planning Capstone/Planning Thesis requirement, which challenges students to utilize to the fullest extent the planning knowledge, skills, and values gained during their MURP program experience. Students must choose which option to undertake—Planning Capstone or Planning Thesis—based on their career goals, personal interests and aptitudes, and the advice of their faculty advisor.

Planning Capstone is a six-credit, project-oriented, one-semester course that results in a substantial deliverable upon completion. The Capstone option is best suited for students who wish to pursue a career as a professional planner after graduation. Most students undertake an individual capstone project, but some may complete a project with a team of two or three students. On a team project, each student must be individually responsible for a clearly defined component of the project as each student will be graded independently for his or her work.

Students may identify their own Planning Capstone client and project topic or they may select from a list of Capstone clients/projects that have been pre-arranged and approved by the MURP faculty. During the semester before enrolling in Planning Capstone, students will be required to: (a) identify their Capstone client and project topic, (b) determine if they will be working independently or as part of a small group, and (c) begin preparing a detailed project prospectus (work plan, schedule, methodology, and deliverables). Also during the semester before Capstone, students must attend a mandatory Capstone Orientation to receive instruction and guidance on project planning and management. Students must have a completed and approved project prospectus by the second week of their Capstone semester.

During the Planning Capstone semester, students complete their project work while maintaining regular contact with their Capstone faculty advisor and client to ensure sufficient progress and work quality, as well as periodically meeting with other Capstone students to

discuss common issues and challenges, share experiences, and receive continued instruction and guidance from the Capstone faculty on project management and methodologies. The Planning Capstone semester concludes with the submission of all deliverables to the client and faculty advisor, a formal presentation to the client, and a poster presentation of the project to the MURP community.

For more information about the Planning Capstone option, please visit the Capstone webpage on the college website.

Planning Thesis comprises a pair of three-credit courses (A and B) taken over two semesters that together constitute a six-credit effort. The thesis option is most appropriate for outstanding MURP students who are considering pursuing a Ph.D. or a research-oriented career after graduation.

While the thesis should address an aspect of urban and regional planning, it may be qualitative or quantitative in design, and directed toward the discovery of new facts, the development of theory or frameworks, or an investigation of an existing body of knowledge. The thesis document usually includes an abstract, a literature review that delineates the problem of interest or a gap in existing knowledge, a statement of research objectives, an explanation of the research design and methods, a report of the results of the research, and a discussion of the findings and their implications for planning.

The thesis is undertaken with the guidance and approval of a three-person thesis committee, including a Thesis Advisor who must be a full-time member of the MURP faculty who holds a professional degree or Ph.D. Students interested in pursuing the thesis option must complete and submit the Planning Thesis Proposal to their intended Thesis Advisor. Students must have their project approved by their Thesis Advisor prior to the course drop deadline in the Planning Thesis A semester. If the proposal is not approved, or the student's prior academic performance is not deemed adequate for participation in the thesis option, the student would enroll in Planning Capstone instead. Once the Thesis Advisor approves the proposal, the student must enroll in the Planning Thesis course using a Special Processing Form that is signed by their Thesis Advisor and submitted to Roxy New.

During the Planning Thesis A (URPL 6920) semester, students identify their research question and study design, work on their literature review, and begin their research. If human subjects research is involved (e.g. interviews, surveys, focus groups, or the like), students should work with their Thesis Advisor to submit their application to the Colorado Multiple Institutions Review Board during Thesis A.

During the Planning Thesis B (URPL 6925) semester, students complete their research and write the bulk of the thesis. Throughout, thesis students will meet regularly with their committee members to ensure sufficient progress and work quality. To graduate, the completed thesis must be successfully defended in an Oral Examination before the Thesis Committee, formatted according to department guidelines, and submitted to the online thesis repository ProQuest by the official deadline.

More information about the thesis option can be found in the MURP Student Handbook.

Program Values and Hallmarks

Our vision is to be a national leader in educating skilled, engaged planners and creating vibrant, sustainable communities.

Our Program Values include:

- **Advocacy** - We believe planners must be visionary in their work, politically engaged, and articulate proponents for positive change.
- **Collaboration** - We believe planners must understand and value the principles and perspectives of allied disciplines that participate in planning and city building.
- **Engagement** - We believe students should learn planning by interacting directly with professionals and the public to solve real-world planning challenges.
- **Evidence-based approaches** - We believe that planning research and practice should be rooted in critical thinking, appropriate methods, and rigorous analysis for developing evidence-based solutions.
- **Service** - We believe our program should serve as a resource for planning professionals and the public by offering ideas, solutions, research, advocacy, and inspiration.
- **Social Justice** - We believe planning must strive to create the most just and equitable processes and outcomes for historically marginalized, underrepresented, and disenfranchised individuals and communities.
- **Sustainability** - We believe planning must be based on the principles of economic viability, environmental resiliency, and social equity.

Our Program Hallmarks include:

ENGAGED AND EXPERIENTIAL LEARNING

We give students numerous opportunities throughout our program to gain hands-on experience by participating in real-world projects and interacting with professional planners and community stakeholders. We use Denver's diverse urban setting and Colorado's rural and mountain landscapes as a real-world classroom for students to engage with the built, natural, and social environments.

PHYSICAL PLANNING ORIENTATION

We emphasize physical planning and design throughout our curriculum and connect them to policy, research, and the social sciences. We work closely with the College's Architecture, Urban Design, Landscape Architecture, and Historic Preservation programs to explore and develop applied solutions to urban social, economic, and environmental issues.

INTERNATIONAL LEARNING OPPORTUNITIES

We provide students the opportunity to study planning from an international perspective. By offering lecture courses that focus on global planning and development issues, studios that involve on-site coursework and engaged learning in other countries, and collaborations with universities and organizations abroad, we help students expand their personal and educational worldview.

INTEGRATED PLANNING TECHNOLOGIES

We integrate into our curriculum key professional technologies in realms such as digital mapping, 3D modeling, data visualization, and spatial analysis. We capitalize on Denver's entrepreneurial spirit and tech-focused economy to provide students with state-of-the-art resources and numerous opportunities to learn a variety of technologies and applications used as critical tools in the planning process.

SELF-DIRECTED ELECTIVE CURRICULUM

We empower students with the opportunity to craft a planning education suited to their career goals and personal interests. Students may choose any combination of elective courses, whether oriented toward one of our three curriculum pillars, a traditional or customized planning specialization, or a generalist survey of the planning field.

PROFESSIONAL AND CAREER DEVELOPMENT

We present students with instruction, guidance, and resources for understanding the many career paths within planning and allied fields, and for strategically positioning themselves to successfully achieve their professional and personal goals. We enable students to be prepared for not only their first planning job, but for a lifelong career.

DIVERSE FACULTY EXPERIENCE

We embody a planning faculty comprised of a mix of clinical professors and lecturers who bring to the classroom years of professional expertise in planning-related fields, and tenure-track professors who bring cutting-edge scholarship and research expertise. All of our faculty make teaching a top priority.

The total number of credit hours required to earn the Master of Urban and Regional Planning (MURP) degree is 54. Required core courses, including two studio-format courses and a final capstone or thesis project, comprise 36 of these credits. Students complete an additional 18 credits of elective courses of their choice, including one course that is an advanced skills/methods elective.

Course	Title	Hours
Year 1		
Fall		
URPL 5000	Planning History and Theory	3
URPL 5010	Planning Methods	3
URPL 5030	Planning Practice and Technology	3
URPL Elective ¹		3
Hours		12
Spring		
URPL 5040	Urban Sustainability	3
URPL 5050	Urban Development	3
URPL 5060	Planning Workshop	6
URPL Elective ²		3
Hours		15
Year 2		
Fall		
URPL 5020	Planning Law and Institutions	3
URPL 6000	Planning Project Studio ¹	6
URPL Elective ³		3
URPL Elective		3
Hours		15
Spring		
URPL 6900 or URPL 6920 and URPL 6925	Planning Capstone or Planning Thesis A and Planning Thesis B	6
URPL Elective		3
URPL Elective		3
Hours		12
Total Hours		54

¹ Elective courses and URPL 6000 Planning Project Studio are also offered in the summer for students who wish to take credits between their first and second year of the program.

² At least one URPL elective must be taken from the Advanced Skills/Methods URPL course list. Please consult the MURP Student Handbook for this list of courses.

- ³ MURP students may take two of their six elective courses entirely outside of the MURP department, as long as the courses are relevant to the student's interests in planning.

Other Programs

Programs

- Geography, Planning, and Design, PhD (p. 163)
- Historic Preservation, MS (p. 166)
- Urban Design, MUD (p. 167)

Historic Preservation (HIPR)

HIPR 6010 - Preservation Theory and Practice (3 Credits)

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with URPL 6499. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors within the College of Architecture and Planning or History graduate majors.

HIPR 6090 - Special Topics in Historic Preservation (3 Credits)

Various topics in historic preservation, according to current faculty and student interests. Prereq: HIPR 6010 or permission of instructor. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6110 - Regionalisms & the Vernacular (3 Credits)

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6170 - Preservation Design Studio (6 Credits)

Preservation Design Studio provides a project-based learning experience for Historic Preservation students; who are typically integrated into a pre-approved studio of one of the College of Architecture & Planning's departments. Topics vary according to faculty interests. Cross-listed: Varies by semester. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to HIPR majors within the College of Architecture and Planning

HIPR 6210 - Historic Buildings in Context (3 Credits)

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept. Procedures and skills are introduced. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6233. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6220 - Adaptive Reuse: Business and Practice (3 Credits)

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists. Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with ARCH 6356. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6310 - Documentation, Analysis, Representation (3 Credits)

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6352. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6330 - The Politics of Preservation (3 Credits)

Achieving the preservation of historic properties requires an ability to effectively use legal tools and successfully articulate the case for preservation to a broad audience. Students will learn how to deploy the theories, tools, and techniques for the protection of historic properties. Restriction: Restricted to Graduate students in a CAP program or Graduate students in the History Department. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate students in a CAP program or Graduate student in the History Department.

HIPR 6410 - Urban Conservation: Context for Reuse (3 Credits)

This course begins with the premise that human habitats, and especially cities, are dynamic and ever changing; and that the preservationist cannot (and should not try) to freeze cities in a static representation of the past. The course deals with both the philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. This includes traditional preservation activities, but also recognizes the importance of progressive change.

Readings are diverse, but at least two case study cities are used to ground the concepts. Class activities include: a) research, b) field study, c) design, and d) presentation. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6355. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6510 - Building Materials Conservation (3 Credits)

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6610 - Reading the City (3 Credits)

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Students prepare a research plan, then conduct research on a relatively unfamiliar urban environment, such as Chicago (or other major city), returning to prepare, present, and critically reflect upon their applied research through a media-savvy final project. Prereq: HIPR 6410 is recommended. Cross-listed with ARCH 6232. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6840 - Independent Study (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6851 - Professional Project (1-3 Credits)

The Professional Project is one of two options for completing the Capstone Requirement. There are multiple ways of satisfying this requirement, but the agreed upon Project must show critically reviewed evidence of professional competence in the field of historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6930 - Internship (3 Credits)

Designed to provide professional practice experience. The internship is composed of eight to twelve hours per week working in a professional preservation setting during the regular semester. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6951 - Thesis (6 Credits)

Thesis is one of two options for completing the Capstone Requirement. Students may choose to develop a specialized thesis in some topic related to historic preservation. Prereq: LDAR 6949. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to majors within the College of Architecture and Planning

Additional Information: Report as Full Time.

Urban Design (URBN)

URBN 6500 - Urban Design Studio I (6 Credits)

Introduces urban design at a citywide scale through the evaluation of urban structures, systems, networks, and spatial forms that create the complex organism known as the city. Students explore urban design concepts as physical solutions to real-world issues. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6525 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6350, ARCH 6270, and LDAR 5530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6550 - Design Policy, Process, and Regulation (3 Credits)

Explores the many design regulations that shape the urban form, how they are created and evolve, and how they impact design ideation, analysis, and communication using real-world scenarios to experiment with and test iterative design processes and techniques. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6397. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6575 - Advanced Visualization for Urban Design (3 Credits)

Provides advanced instruction in effective communication and visualization through the use of digital tools commonly used in urban design (e.g. Photoshop, Illustrator, InDesign, SketchUp, Lumion). Topics include graphic design theory, use of storyboards, renderings, diagrams, maps, sketches, photographs, and infographics. Prerequisite: Intermediate-level knowledge and experience in the Adobe applications covered in the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

URBN 6600 - Urban Design Studio II (6 Credits)

Advances the understanding and application of urban design tools, methods, and practices and engages students in a real-world project with a community partner. Students integrate real estate development, economics, environmental and social equity, aesthetic criteria, historic preservation, and community engagement. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6625 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Restriction: Restricted to graduate-level students. Cross-listed with URPL 6395 and ARCH 6261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URBN 6640 - History of the City (3 Credits)

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with ARCH 6240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6641 - Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6398 and LDAR 6741. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6643 - Visualization for Planning (3 Credits)

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling infographics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6644 - Sustainable Urbanism (3 Credits)

This seminar explores the connections between ecology and urbanism. It will examine the multiple, interrelated ecological and social systems operating in the city. Students will explore innovative design processes and techniques that serve to create a higher quality of life and place with a particular emphasis on the effectiveness of sustainable design approaches at varying scales. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6645 - Global Design Practice (3 Credits)

This seminar will educate students about critical issues related to practicing design in a global context. Course will examine diverse issues of design and planning practice from contracts, communication and culture to remote research, design opportunities and ethics. Prereq: URBN 6612. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6650 - Urban Design and the Environment (3 Credits)

Provides an understanding of the inextricable relationship between urban design and the natural environment. Students learn how to design sustainable public spaces, promote environmental resilience, combat climate change, and foster environmental justice and healthy communities through urban design. Restriction: Restricted to graduate-level students. Cross-listed with URPL 6396. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URBN 6652 - Design Seminar (3 Credits)

Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with LDAR 6652. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6675 - Design Practice and Leadership (3 Credits)

Provides students with an understanding of urban design as a professional practice; how it functions within a collaborative, interdisciplinary environment; and the interpersonal skills needed to successfully work as part of and be a leader in a complex design team. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6686 - Special Topics: Urban Design (3 Credits)

Various topical concerns are offered in urban design history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6700 - Urban Design Advanced Travel Studio (6 Credits)

Travels to international or US urban location(s) to engage in advanced urban design development, analysis, and production on a real-world project that includes multiple environmental, cultural, and economic influences; wide-ranging urban planning contexts, and various design dimensions and functional considerations. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6725 - Urban Design Capstone (6 Credits)

Requires students to work individually, paired with an urban design practitioner mentor, on a complete design solution for a real-world client that incorporates the full spectrum of urban design knowledge, methods, and skills to produce professional-grade urban design plan deliverables.

Prereq: URBN 6600: Urban Design Studio II. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URBN 6600

URBN 6840 - Independent Study: URBN (1-6 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban design. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URBN 6930 - Urban Design Internship (3 Credits)

Designed to provide professional practice experience in urban design. Emphasis on actual work experience in settings with client groups as students assist them in determining solutions. Program directors approval required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Geography, Planning, and Design, PhD

Graduate School Policies and Procedures (p. 59) apply to this program

Contact: Dr. Jeremy Németh, Director

Telephone: 303-315-1000

Email: jeremy.nemeth@ucdenver.edu

Overview

The Ph.D. in Geography, Planning, and Design at the University of Colorado is a research-oriented degree offered by the College of

Architecture and Planning (CAP) at the University of Colorado Denver. Initiated in 1997, the program is dedicated to the education of future intellectual leaders in the fields of the built environment who have a critical understanding of the social, political, and global conditions that influence their profession.

It is the intent of the program to prepare students to excel in research regarding the planning and design of built environments through the incorporation of intellectual, analytical, and integrative aspects of the involved professions. Within this context, students and faculty seek to creatively shape the built environment and understand it in relation to institutional, political, economic, social, and natural environments.

Admission to the program is competitive and based on merit and available funding. Excellent academic performance, references, and a commitment to critical issues in the built environment are prerequisites.

The minimum residency requirement is four semesters, not including summer semesters. In the first two years of residence, students take courses to satisfy the credits relevant to preparation for writing their dissertation and the core requirement of the program, as well as additional electives. After completing these requirements, the student takes a comprehensive exam.

After satisfying program requirements, students move on to preparing a dissertation topic and research proposal which is presented and defended in a public event. With the successful defense of the dissertation topic and research proposal, students are admitted to candidacy. Finally, the completed dissertation is defended in a public examination involving external examiners in addition to the members of the committee. Upon successful completion of the dissertation defense, the program recommends the awarding of the Ph.D. degree.

One of the strengths of the College of Architecture and Planning Ph.D. program is that students can take advantage of resources in all departments and fields in the College and elsewhere in the university. In addition to faculty from within the College of Architecture and Planning, we have a broad and exciting group of affiliated faculty from many departments across the university.

The Ph.D. degree in Geography, Planning, and Design is appropriate for those seeking careers in research and teaching or roles in government or professional consultation, all of which require a research specialization. So far, over 60 graduates of the program have gone on to faculty positions at universities in the United States and elsewhere, post-doctoral work, and into private consulting, non-profit organizations, and the federal government.

Admission Requirements

Prerequisites

Applicants admitted to the PhD program normally will have completed the requirements for the Master of Architecture, Master of Planning, Master of Landscape Architecture, or a related master's degree program. Students from allied fields are encouraged to apply. Field specialization and background are open.

GPA and TOEFL Scores

Consistent with the University requirements, applications are evaluated based on Grade Point Average (GPA) scores, and the Test of English as a Foreign Language (TOEFL) scores (where applicable). All exams must have been taken within a year before applying to the program:

- Academic achievement as evidenced by an undergraduate grade point average of 3.0 (on a 4.0 scale) or better, and a graduate grade point average of 3.5 or better.
- Applicants whose native language is not English must take either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) exam, or have a graduate degree from a university in the U.S. or another English-speaking country. The minimum TOEFL score required for acceptance by the University of Colorado at Denver is 80 or higher on the TOEFL (sub-scores of 20 in Reading, Listening, and Speaking, and 24 in Writing) or 6.5 on the IELTS (sub-scores of 5.5 in each area). However, the Ph.D. program typically does not accept a student with a score lower than 85 on the TOEFL and 6.8 on the IELTS.

Application Checklist

The following documents must be submitted before an application will be considered:

- Application Forms - Apply online!
- Application Fee
- Three Letters of Recommendation
- Examples of previous research and written works
- Official transcripts from all previously attended institutions of higher learning
- Statement of Personal and Professional Goals
- Scores of Test of English as a Foreign Language (TOEFL) for non-U.S. residents whose native language is other than English
- Financial Statement (for non-U.S. residents/citizens)

Program Requirements

Overview

Successful completion of the PhD program requires fulfilling course requirements, passing the comprehensive examinations, preparing and defending a dissertation proposal, and undertaking research, writing and defending a dissertation. This is a multi-year process that involves a close mentoring relationship with the student's advisor.

A student's program of study must include at least 12 semester hours of Ph.D. Program core classes and 24 semester hours of study within the area(s) of focus established with the Primary Advisor. The student may focus on one main field of interest or a major and minor field.

Students shall complete the minimum of 36 semester hours in their area(s) of focus and Ph.D. Program core requirements prior to advancement to candidacy. Credit transfers are not allowed. Credits earned from previous courses before the student is enrolled in the Ph.D. program cannot be used as credit toward the Ph.D. degree.

Students must maintain a 3.0 GPA in all their coursework. A grade of less than B in any Ph.D. Program requirement shall not be accepted as meeting those requirements. For Program Core courses, the student must retake the course. A Program Core course may be retaken only once. The student shall be terminated from the program if a grade less than B is received more than once in a Ph.D. Program Core Course.

In addition, students must also pass a comprehensive exam as well as write and defend a dissertation proposal and dissertation.

Residency and Enrollment Requirements

The minimum enrollment requirement at CU Denver for doctoral students is six semesters of full-time scholarly work beyond the attainment of a bachelor's degree.

The doctoral program requires a minimum of two years of residency (not fewer than four semesters enrolled in a minimum of six semester hours each, excluding summer) devoted to coursework and other preparation for advancement to doctoral candidacy status. Ordinarily, research for the dissertation will also be completed while in residence. After that time, special arrangements can be made with the CAP Ph.D. Committee if substantial work needs to be performed elsewhere.

Students must complete the comprehensive examinations and dissertation proposal within four years from the beginning of their first semester in which they are enrolled as a Ph.D. student at the University of Colorado Denver. In addition, the University of Colorado Denver requires that all degree requirements be completed within eight years of matriculation.

Active Status

To remain actively enrolled, students must register for six semester hours or more each academic semester (excluding summer) until they become a doctoral candidate. Once they become a doctoral candidate, students must register for at least one semester hour per semester. Students who are not so registered are automatically withdrawn from the University of Colorado Denver and must apply for readmission to the program. The readmission decision will depend on the student's academic record and progress toward the degree.

Doctoral students must register for a minimum of one hour of dissertation credit in the term of graduation. If all requirements for graduation, including submission of the final approved dissertation, have been completed prior to the last day of registration, and the student was registered for the preceding term, the student may apply for a waiver of the enrollment requirement.

Advising and Committees

Overview

Each student entering the program shall have a Primary Advisor. Students wishing to change their Primary Advisor should do so during their first year. All appointments of Primary Advisor must be approved by the Ph.D. Program Director. Students wishing to change their Primary Advisor after the first year must petition the Ph.D. Program Director for approval. The Dissertation Advisory Committee is comprised of a Primary Advisor and at least two additional members. Any of these three may serve as the Chair of the Dissertation Advisory Committee.

Primary Advisor

The Primary Advisor guides the student through the completion of the course requirements, the preparation for the comprehensive examinations, the dissertation proposal, and the dissertation. The Primary Advisor must have a doctoral degree and be a tenured/tenure-track member of the College's Ph.D. Program or an invited affiliate faculty with a regular appointment to the Graduate School. The Primary Advisor may serve as the Chair of the Dissertation Committee but may not serve as the Chair of the Comprehensive Exam Committee.

Committee Chair

The Committee Chair's primary responsibility is serving on the student's Advisory Committee and chairing the dissertation defense.

Dissertation Advisory Committee

The Dissertation Advisory Committee provides guidance for the investigated dissertation topic, comprehensive examination, dissertation, and the final dissertation examination.

This Committee includes at least three faculty members: the Primary Advisor and at least two additional committee members. One of the committee members must be a full-time faculty member of the College, and the majority of the committee members must have a Ph.D. degree. All committee members must hold Graduate Faculty appointments. This Committee must be fully formed by the beginning of the student's third semester of study.

Membership of this Committee may change if the student's interests and needs change. Any changes should be developed in consultation with the student's advisor and must be approved by the Ph.D. Program Director. The Dissertation Advisory Committee must meet with the student at least once each year to assess progress.

Comprehensive Examination Committee

This Committee consists of a minimum of three graduate faculty members, including the Primary Advisor. Although it is not a requirement, this Committee should mainly consist of the Dissertation Advisory Committee. At least one member of the Comprehensive Examination Committee must be a full-time faculty member of the College, and the majority of the committee members must have a Ph.D. degree. All committee members must hold Graduate Faculty appointments.

Final Dissertation Examination Committee

The final Dissertation Examination Committee shall be formed according to the Policies and Procedures of the Graduate School. All committee members must hold Graduate Faculty appointments.

Special Circumstances

If the Primary Advisor leaves the faculty of the College before the comprehensive exam and/or dissertation topic is approved, the Ph.D. Program Director will work with the student to identify a new Primary Advisor and Chair for the Committee.

If the Primary Advisor leaves the faculty of the College after the comprehensive exam and/or dissertation topic is approved, and both the Primary Advisor and the student wish to continue in the advising relationship, the original Primary Advisor can continue to be co-advisor with the appointment of a co-advisor from within the Program. The Primary Advisor may be appointed as adjunct faculty in the Graduate School and will continue to hold a regular graduate faculty appointment until the student graduates, in order to recognize his or her continuing role, with approval of the Ph.D. Program Director.

If a member of the Dissertation Committee other than the Primary Advisor is unable to continue in this role, for any reason, the Primary Advisor will work with the student to identify a new member for the Committee. Upon accepting to serve in this role, the new member of the Committee must sign on the dissertation topic and dissertation proposal documents as they were previously approved.

Curriculum

The minimum requirement is 36 semester hours of coursework, all of which must be at the Graduate level (5000 and above) and 30 hours of dissertation semester hours. All Ph.D. students are required to take 12 semester hours of core courses.

The curriculum is divided into three stages consisting of core courses, major and minor field courses, and the dissertation. The program requires a minimum of 66 semester hours of graduate work, 36 of which must be earned while in residence.

Each student's curriculum is tailored to his/her individual needs and is determined in close consultation with the dissertation advisor. Within their area of specialization, students will identify a major area of study and an outside field of study. All students are required to enroll in the Ph.D. Colloquium and Research Methods core courses during the first and second years of course work.

Core Courses (12 semester hours, minimum with B or better grade)

Code	Title	Hours
Ph.D. Colloquium 1		1
Ph.D. Colloquium 2		1
Ph.D. Colloquium 3		1
Ph.D. Colloquium 4		1
Literature Review survey with the committee chair		2
Two Research Methods courses		6
Total Hours		12

Courses supporting the Area(s) of Interest (24 semester hours, minimum grade of B)

Students work with their Dissertation Advisory Committee to designate their area(s) of interest. This designation is not intended to reflect the particular focus of their dissertation topic but rather the disciplinary context within which their dissertation topic resides. Students, in consultation with their advising team, may select one central area of study or a major and minor area of study. This designated course of study forms the basis for their comprehensive exam.

Dissertation Credits (variable): (30 semester hours, minimum of B or better grade)

During the course of doctoral study, students may enroll for credits related to their preparation for comprehensive exams, the dissertation proposal and preparation, or advisor approved independent study as dissertation credits.

Typical Course of Study

First Year

Students develop their degree plan, take six semester hours of the required Core Curriculum, complete additional courses in their specialty area, and any prerequisite courses.

Second Year

Students take the remaining core courses, continue to take electives in their specialty areas, begin literature surveys and reviews, and prepare for their comprehensive exam.

Third Year

Students complete their specialization papers, prepare a dissertation proposal, complete the literature review, and take the comprehensive exam.

Fourth/Fifth Year

Fourth and fifth years are spent researching and writing the dissertation.

Ph.D. Degree Time Limit: Eight Year Completion Requirement

The University of Colorado Denver requires that doctoral students, whether enrolled full time or part time, must complete all degree requirements within eight years of matriculation. Students who fail to complete the degree in this eight-year period are subject to termination from the Graduate School upon the recommendation of the program director and concurrence of the Dean. For a student to continue beyond the time limit, the program director must petition the Dean for an extension and include:

1. reasons why the program faculty believes the student should be allowed to continue in the program and
2. an anticipated timeline for completion of the degree.

Approved leaves of absence do not automatically extend the time limits for earning a degree, but they may be used as a reason to request an extension if needed.

For more information on the Ph.D. in Design and Planning, visit the College of Architecture and Planning website.

Historic Preservation, MS

Graduate School Rules (p. 59) apply to this program

Program Director: Steve Turner

Office: CU Denver Building, 2nd Floor

Telephone: 303-315-1000

E-mail: steve.turner@ucdenver.edu

Introduction

The Master of Science in Historic Preservation (MS HP) is a 45 semester-hour program, usually completed in 15 or 18 months (three regular semesters and possibly part or all of one summer). It is designed to accommodate the background and needs of both those students with substantial experience and those new to the field. The course of study is for students seeking training in spatial, technical and design aspects of the broader field; it encompasses architecture, cultural landscapes, preservation, planning, building technology, project management, documentation, interpretation and representation.

In a rapidly changing cultural, economic and professional environment, it is valuable to have an understanding of what is worth saving of the built environment. However, appreciation for the past alone is insufficient for making the informed and creative decisions expected and required of cutting-edge professionals. The practice of historic preservation is very different today than it was when graduate programs first were developing some 40 years ago. The CU Denver MS HP is among a new generation of studies that looks to historical resources as they relate to a more desirable future.

As global economies change fewer resources are available for new buildings and we must adaptively reuse our existing structures. This trend will continue beyond short-term economic conditions, because it will always be a more sustainable practice to reuse existing buildings than to tear them down and harvest or manufacture new materials.

The College of Architecture and Planning, and the professional community that it serves, foresee a significant and permanent shift towards more adaptive reuse of existing buildings. The Master of Science

in Historic Preservation is a program designed to prepare students for a true 21st Century career.

Historic preservationists come from a variety of backgrounds. Some are well-educated in the humanities and desire to increase their technical understanding. Those familiar with the social sciences might be seeking "real world" applications for their expertise. Many already with "first professional degrees" in design and planning disciplines, as well as the law and business, seek to deepen their competence in the vibrant and interesting professional niche of historic preservation.

Prerequisites

The Master of Science in Historic Preservation program is fully integrated into a college emphasizing design and graphic excellence. While HP students need not have fully developed skills in advance of matriculation we have found that some students have benefited from some previous exposure to basic graphic skills. Elective courses in the College of Architecture and Planning may also be used to develop these skills.

Admissions

Application to the Master of Science in Historic Preservation program is open to all students holding the bachelor's (undergraduate) degree from an accredited college (or its equivalent from a foreign institution).

Materials Required

- A brief statement of interest (500 word max.)
- A compact sample of work (max. 15 pages 8.5" X 11") of writing samples, and optionally, graphic work and professional resume is recommended.
- Submission of Graduate Record Exam (GRE) scores is optional. [There is an expedited application procedure for current CU Denver students in another CAP master's program. Please inquire to the MS in Historic Preservation program director.]

Transfer Credit

Transfer credit of up to 12 semester hours (up to 15 semester hours for those seeking/holding a related master's degree from CU Denver) may be awarded for equivalent graduate (post-bachelor's) course work at the discretion of the program director and in keeping with CU Denver Graduate School rules. Students holding a master's degree in Architecture, Urban Planning or Landscape Architecture are typically awarded 12 to 15 semester hours of advanced standing. Additional advanced standing may be considered in accordance with the rules of the Graduate School.

Undergraduate Course Work

Undergraduate course work substantively equivalent to a MS HP required course may be accepted as a substitution for that course at the program director's discretion, but such substitution will not reduce the total number of semester hours required for the degree.

Program Requirements

The course of study is designed to accommodate the background and needs of both those students with substantial experience, and those new to the field. The curriculum is flexible but rigorous, requiring:

Code	Title	Hours
Preservation		15
Design History		6
Capstone		9

Open Elective Hours	15
Total Hours	45

Students enrolling full-time in the 45 semester hour curriculum typically complete the program in three or four semesters, or 18 months. However, course work other than the completion of the capstone requirement may be accomplished in a period of residency as short as 15 months. Students receiving significant transfer credit and those with a related degree may further reduce the time required for the MS degree in Historic Preservation.

Our program is compliant with National Council of Preservation Education Standards.

Required Curriculum

Code	Title	Hours
Preservation		15
HIPR 6010	Preservation Theory and Practice	
HIPR 6210	Historic Buildings in Context	
HIPR 6220	Adaptive Reuse: Business and Practice	
HIPR 6310	Documentation, Analysis, Representation	
HIPR 6510	Building Materials Conservation	
HIST 5232	Historic Preservation	
Design History		6
Select at least two courses:		
HIPR 6110	Regionalisms & the Vernacular	
HIPR 6410	Urban Conservation: Context for Reuse	
HIPR 6610	Reading the City	
LDAR 5521	History of Landscape Architecture	
URPL 6350	City Design Fundamentals	
Several other CAP and History Department courses may also qualify		
Capstone		9
Choose either Professional Project or Thesis		
HIPR 6851	Professional Project	
	or HIPR 695: Thesis	
Pre-Approved Electives (3-6 hours) ¹		
Electives		15
Up to 15 elective semester hours		
Total Hours		45

¹ Students who elect the Professional Project track will need 6 hours of pre-approved electives. Students who choose the Thesis track will need 3 hours of pre-approved electives.

Urban Design, MUD

Program Director: Ken Schroeppel

Program Advisor: Roxy New

Telephone: 303-315-1000

Email: ken.schroeppel@ucdenver.edu (ken.schroeppel@ucdenver.edu)

Program Description

The Master of Urban Design (MUD) is an advanced post-professional degree program for individuals who seek a career in urban design practice or for current planning and design professionals who want to

enhance and expand their existing practice with urban design knowledge and expertise.

To be accepted into the MUD program, an individual must hold a master’s degree in architecture, urban planning, or landscape architecture, or an accredited professional undergraduate degree in architecture, urban planning, or landscape architecture. Students in CU Denver’s MArch, MLA, and MURP programs may be eligible to apply to the MUD program and begin earning MUD credits before they complete their prerequisite master’s degree through the MUD Overlapping Degree Option (see below).

The MUD program consists of nine courses: one studio and three lecture courses in the fall, one studio and three lecture courses in the spring, and either a travel studio or capstone project in the summer. To earn the MUD degree, a student must complete all nine courses totaling 36 credits. The MUD program is designed to be accomplished in a single calendar year (fall, spring, and summer semesters) as a full-time, immersive experience; however, students with qualifying circumstances or students admitted through the MUD Overlapping Degree Option may complete the program over a longer timeframe.

Using Colorado’s diverse urban landscapes as a laboratory for real-world learning experiences, our MUD program teaches and trains students to become exceptional urban design thinkers, practitioners, and leaders in their communities; collaborates with urban designers to advance the profession and position it at the intersection of the city-building disciplines; and engages with the community to create great places that are sustainable, inclusive, equitable, healthy, and inspiring.

Prerequisites

The Master of Urban Design at CU Denver is an advanced post-professional degree. In order to be admitted to the program, an individual must hold (or will hold by the start of their MUD studies) a professional degree in architecture, urban planning, or landscape architecture (minimum GPA 3.00) from an accredited program. Professional degrees in architecture, urban planning, and landscape architecture can be obtained at either the undergraduate or graduate levels.

Qualifying Degrees:

- Master of Architecture (M.Arch)
- Bachelor of Architecture (B.Arch)
- Master of Urban Planning (MUP, MURP, MCP or similar)
- Bachelor of Urban Planning (BSUP, BSURP or similar)
- Master of Landscape Architecture (MLA)
- Bachelor of Landscape Architecture (BLA or BSLA)

The qualifying degree must be accredited through the National Architectural Accrediting Board (for architecture), the Planning Accreditation Board (for urban planning), or the Landscape Architectural Accreditation Board (for landscape architecture) for programs in the United States. For international applicants, please contact us for more information.

Overlapping Degree Option for current CAP students:

The MUD Overlapping Degree Option gives students in the MArch, MLA, and MURP programs at CU Denver the opportunity to apply to the MUD program and begin earning MUD credits before they complete their prerequisite master’s degree. By taking MUD lecture courses that qualify as open or cross-listed electives toward their prerequisite degree, students can reduce the total number of credits required to earn both

degrees. For details about the Overlapping Degree Option, current CU Denver CAP graduate students should contact their Academic Advisor.

Admissions

The Master of Urban Design program accepts applications for fall semester entry. The program does not encourage entry to the program in any spring semester due to the specific sequencing of the classes.

The priority deadline for all applicants is April 1; final deadline is June 15. The requirements the admissions committee considers are:

- Academic transcripts of the qualifying degree(s)—see Prerequisites section above
- A minimum 3.00 GPA is required to apply to the MUD program. Applicants with a 3.20 GPA or higher do not need to submit Graduate Record Examinations (GRE) scores. Applicants with a GPA below 3.20 are required to submit GRE scores
- A portfolio that includes examples of student or professional projects that show your planning/design-related knowledge and skills, ability to graphically express planning/design and spatial concepts and processes, organizational and communication (written and graphical) capabilities, and competency in various planning/design computer applications
- A statement of purpose that includes your educational and professional goals and a thoughtful explanation of how a MUD degree will allow you to achieve your goals
- Resume describing your educational and professional background
- Three letters of reference, at least one from an academic reference if your most recent academic degree was earned within the last five years
- International applicants must submit proof of English language proficiency. For more information regarding English Language Proficiency and international transcripts at the CU Denver International Admissions website.

Program Requirements

The MUD curriculum features a mix of lecture and studio courses that comprehensively cover the spectrum of urban design theory and practice and emphasizes hands-on experiential learning and skills development. The curriculum consists of nine courses: one studio and three lecture courses taken in the fall semester, one studio and three lecture courses taken in the spring semester, and the final requirement—a capstone project or advanced travel studio (student’s choice)—taken during the summer. To earn the MUD degree, a student must successfully complete all nine courses totaling 36 credits.

Students entering the MUD program who lack certain design knowledge or skills may be required to take the program’s Design Skills Workshop before the start of the Fall semester, as determined by the program’s admissions review committee.

The program curriculum is 36 credit hours and consists of the courses shown below:

Code	Title	Hours
URBN 6500	Urban Design Studio I	6
URBN 6525	City Design Fundamentals	3
URBN 6550	Design Policy, Process, and Regulation	3
URBN 6575	Advanced Visualization for Urban Design	3
URBN 6600	Urban Design Studio II	6

URBN 6625	Urban Design Economics and Equity	3
URBN 6650	Urban Design and the Environment	3
URBN 6675	Design Practice and Leadership	3
<i>Students choose of ONE of the following 6-credit courses:</i>		
URBN 6700	Urban Design Advanced Travel Studio	6
or URBN 6725	Urban Design Capstone	
Total Hours		36

Program Vision, Mission, and Hallmarks

THE VISION FOR URBAN DESIGN EDUCATION AT THE COLLEGE OF ARCHITECTURE AND PLANNING:

- We are an international model for training the urban designers of tomorrow and for working closely with urban design professionals and the community to create places that enrich people and the planet.

THE URBAN DESIGN MISSION IS TO:

- Teach and train students to become exceptional urban design thinkers, practitioners, and leaders in their communities.
- Collaborate with urban designers to advance the profession and position it at the intersection of the city-building disciplines.
- Engage with the community to create great places that are sustainable, inclusive, equitable, healthy, and inspiring, while providing students with real-world learning experiences.

THE MASTER OF URBAN DESIGN PROGRAM'S FOUR HALLMARKS ARE:

- **Professional Engagement:** Our Master of Urban Design program prepares students for professional practice and positions them for career advancement through ongoing engagement and partnerships with distinguished practitioners in urban design, architecture, city planning, landscape architecture, and related fields. The curriculum, which balances theory and practice, draws significantly from practicing faculty to elevate the professional competency of students, and prepare them for long-term career success. Students are exposed to the many issues that cities currently face, including elements of planning policy; zoning and development regulations; public realm design; mobility and transportation; economics; social equity and environmental sustainability; and community engagement. This allows students to develop a deep understanding of the role of urban design in the city-building process and learn urban design by engaging with practitioners who are implementing projects and actively working in the delivery and evolution of urban places.
- **Community Engagement:** Our Master of Urban Design program develops sustained partnerships with local communities and organizations to work together to advance the goals of the MUD program, urban design practice, and the broader community through the exchange of ideas and the exploration of creative design concepts. It is critical that the design of cities and the spaces and places that urban designers help shape have people as their central focus. For urban designers to best design cities as people-centered places, they must engage with the community in meaningful ways. These partnerships recognize the wealth of resources and wisdom that already exists within communities and focus on understanding their issues, problems, and challenges. These community partnerships require students and faculty to approach engagement with a "listen and learn" attitude, foster mutually beneficial relationships, and ultimately create lasting positive impacts for all people and places.

- **Environment and Equity:** Our Master of Urban Design program focuses on the connections between urban form, public space, social equity and justice, ecological systems, environmental quality, and public health that exist at multiple scales. From the street to the neighborhood and from the city to the region, students explore the complex infrastructure systems, social networks, and ecosystems that affect our built and natural environments and look to develop new paradigms and design solutions that fight against environmental degradation, climate change, and social and racial inequities. Emphasizing the imperative for multidisciplinary approaches, the MUD program focuses on the triple bottom line of social, economic, and environmental sustainability and resilience in our cities and towns and the ever-increasing role that urban design plays in addressing climate change, disparities and displacement in underserved and historically marginalized communities, and public health and wellness.
- **Leadership:** Our Master of Urban Design program is structured to train students how to communicate confidently with other disciplines, facilitate effective teamwork, and tackle complex urban issues to create the next generation of civic and design leaders. Urban design is positioned at the intersection of multiple professions that participate in the city-building process including architecture, landscape architecture, city planning, civil engineering, and public policy and finance. A strong urban designer has a working knowledge of these allied disciplines and applies a breadth of knowledge to their professional work. The MUD program curates a student's skillset to position them to play critical leadership roles guiding multi-disciplinary teams and to advance the careers of those already working in urban design as well as provide a rigorous and comprehensive platform for those newly embarking on an urban design career.

Plan of Study

The MUD program consists of nine courses: one studio and three lecture courses in the fall, one studio and three lecture courses in the spring, and either a travel studio or capstone project in the summer. To earn the MUD degree, a student must complete all nine courses totaling 36 credits. The MUD program is designed to be accomplished in a single calendar year (fall, spring, and summer semesters) as a full-time, immersive experience; however, students with qualifying circumstances or students admitted through the MUD Overlapping Degree Option may complete the program over a longer timeframe.

Course	Title	Hours
Year 1		
Fall		
URBN 6500	Urban Design Studio I	6
URBN 6525	City Design Fundamentals	3
URBN 6550	Design Policy, Process, and Regulation	3
URBN 6575	Advanced Visualization for Urban Design	3
Hours		15
Spring		
URBN 6600	Urban Design Studio II	6
URBN 6625	Urban Design Economics and Equity	3
URBN 6650	Urban Design and the Environment	3
URBN 6675	Design Practice and Leadership	3
Hours		15

Summer

URBN 6700 or URBN 6725	Urban Design Advanced Travel Studio or Urban Design Capstone	6
Hours		6
Total Hours		36

Graduate Certificates

- Design Build Graduate Certificate (p. 170)
- Geospatial Information Science Graduate Certificate (p. 170)
- Historic Preservation Certificate (p. 171)
- Integrated Construction, Management + Leadership Graduate Certificate (p. 172)

Design Build Graduate Certificate

Contact: Erik (Rick) Sommerfeld

Telephone: 303-315-0008

E-mail: erik.sommerfeld@ucdenver.edu

Introduction

The College of Architecture and Planning offers a graduate certificate design build as an extension of the MArch program. The certificate course work totals 18 credit hours and emphasizes design build from the designer's point of view.

Certificate Requirements

Five courses totaling 18 semester hours can be applied to the MArch graduation requirements:

Code	Title	Hours
ARCH 6370	Introduction To Design Build	3
ARCH 6471	Managing Quality & Risks	3
ARCH 6472	Architecture in a Single Source Project Delivery	3
ARCH 6373	Construction in Design Build	3
ARCH 5140	Design Studio IV	6
Total Hours		18

Geospatial Information Science Graduate Certificate

Contact: Michael Hinke (Co-coordinator)

E-mail: michael.hinke@ucdenver.edu

Contact: Austin Troy (Co-coordinator)

Telephone: 303-315-1006

Email: austin.troy@ucdenver.edu

Introduction

Geospatial Information Science (GIS), known to some as "computer mapping," is used to store, manage, analyze, synthesize, and display spatial data and information. In the College of Architecture and Planning we use GIS to analyze and understand space, to answer the place-based questions posed by our stakeholders and our clients, and to create the planning- and research-oriented maps that are critical to communicating with our stakeholders. Our work with GIS in the college is built on the many advances in Geospatial Information Science over the last 40 years.

This certificate program is intended for motivated people with a strong interest in the application of GIS to the design and planning professions. It is targeted both at students currently enrolled in a University of Colorado degree program who wish to add a credential to their degree, and working professionals who do not wish to enroll as degree-seeking students, but who wish to pursue a certificate to improve job skills.

Students who earn this Certificate through the College of Architecture and Planning at the University of Colorado Denver will exit the program with the following:

- An understanding of GIS theory and concepts
- Technical mastery of general GIS methods using ArcGIS as well as familiarity with remote sensing
- Familiarity with common public geospatial data sources, as well as metadata standards
- Knowledge of data interoperability, including how to move data and maps from one software platform to another; examples of software includes Adobe Creative Suite, 3D Studio Max, SketchUp, RhinoTerrain, ArcMap, and Quantum GIS
- Specialized skills in geospatial technologies and methods related to the design and planning professions, including rendering and visualizations, infrastructure and transportation network analysis, cadastral mapping, site selection and analysis, geodesign, and many others.

GIS is a rapidly growing field and an increasingly important job skill. GIS skills are showing up as requirements for architects, landscape architects and planners. Our GIS Certificate holders are currently working as: environmental planners, transportation planners, city planners, urban designers, landscape architects and software developers.

A minimum of a 3.0 GPA in all GIS related course work is required to earn the GIS Certificate, and for certificate credit a B- or better is required in all GIS certificate courses.

Eligibility, Application, and Tuition and Fee Information

The certificate program is open to all. Applicants already enrolled in a University of Colorado degree program need only submit an internal application to the CAP GIS certificate program. Applicants who are not currently enrolled in a degree program must apply to CU Denver as non-degree seeking students and also submit an application to the CAP GIS certificate program. More details on the process are available from the coordinators.

Apply as a non-degree-seeking student in the Admissions area of the university website.

Find tuition and fee information in the Bursar's Office area of the university website.

Students interested in pursuing the GIS Certificate may start the conversation with their academic advisors, or one of the GIS coordinators. Michael Hinke serves as the director of the interdisciplinary GIS teaching lab on campus (the Facility for Advanced Spatial Technology), and he is happy to talk to students who need more information about classes taught in Geography and Civil Engineering.

Course Requirements

The GIS Certificate is designed to supplement students' course work in their field of study. Degree seeking students in the College of Architecture and Planning wishing to pursue the GIS Certificate are expected to take 12 additional semester hours of course work to complete the certificate.

Achieving the GIS certificate in your degree program requires you to follow the appropriate advising sheet.

- Master of Landscape Architecture - GIS Advising Sheet
- Master of Urban and Regional Planning - GIS Advising Sheet

Code	Title	Hours
Part 1: Introductory GIS Class		
URPL 6250 or LDAR 5540	GIS for Urban Planning Introduction to GIS	3
Part 2: Advanced GIS Methods Class		
URPL 6260	Advanced Geo-Spatial Methods	3
Part 3: Remote Sensing		
Select one of the following:		3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	
GEOG 5093	Remote Sensing of the Environment (Boulder Campus course) ¹	
Part 4: Specialized Advanced Classes		
Select 9 semester hours of the following:		9
GEOG 5081	Cartography and Computer Mapping	
GEOG 5085	GIS Applications for the Urban Environment	
GEOG 5090	Environmental Modeling with Geographic Information Systems	
GEOG 5091	Open Source Software for Geospatial Applications	
GEOG 5092	GIS Programming and Automation	
GEOG 5095	Deploying GIS Functionality on the Web	
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	
CVEN 5382	Geospatial Data Development	
CVEN 5385	GIS Relational Database Systems	
CVEN 5800	Special Topics (Geomatics for GIS)	
LDAR 6686	Special Topics: Landscape Architecture	
Any course from the Part 3 list (either track) not already used to fulfill the Part 3 requirement		
Up to 3 semester hours from a studio course where intensive GIS is used. ²		
Up to 3 semester hours for an internship using GIS in a planning or design context, also by petition. ³		
Other relevant courses by permission		
Part 5: Portfolio		
Total Hours		18

¹ Cost and financial aid availability may vary.

² This must be done by submitting a petition to the coordinators describing the GIS activities undertaken.

³ Please see the coordinators before you start the process of looking for an internship.

Portfolio

Students pursuing the GIS Certificate are strongly encouraged to assemble a digital portfolio of GIS-related work undertaken in classes in the College of Architecture and Planning.

The Certificate Coordinators and the Academic Advisors have materials to help students prepare their portfolios. Students are encouraged to work with the GIS faculty to cater their portfolio to their intended careers.

Note: Students pursuing the GIS Certificate in the College of Architecture and Planning are expected to use GIS data and software in their design and planning related classes.

Graduation

Students who have completed all of the requirements for the GIS Certificate must submit their GIS Certificate form at the start of the semester that they plan to graduate.

Historic Preservation Certificate Introduction

Historic Preservation is significantly more than the restoration of buildings from the past. It is frequently a part of dynamic and inviting public spaces. It is at the forefront of the green building movement and environmental sustainability, and it can advance social equity while celebrating cultural diversity.

The Historic Preservation Certificate is designed for students and professionals who are pursuing or already hold a Master of Architecture, Master of Urban Planning, Master of Landscape Architecture, or anyone who wants to explore the diverse issues around Historic Preservation.

The Certificate is a 15 Credit Hour Program which can be completed in conjunction with other CAP programs or as a separate area of study for students or professionals who are already in the work environment.

Admissions

Application to the Historic Preservation Certificate is open to all students holding a Bachelor of Architecture (B.Arch) degree from an accredited institution, or are currently pursuing or have completed a master's degree from an accredited institution. Students currently pursuing a CU Denver master's program are admitted on an automatic basis.

Degree-seeking students: please complete this application form (https://ucdenverdata.formstack.com/forms/historic_preservation_application/).

Non-degree seeking students: please complete this application form (<https://passport.ucdenver.edu/slate/landing.php?sr=ce3d18bd-7d79-453e-908f-bb2caca52ed8>).

Materials Required for Non-Degree Seeking Applicants:

- A brief statement of interest (500-word max.)
- Professional resume
- College transcripts
- One letter of recommendation

Certificate Completion Form

All students pursuing the Historic Preservation Certificate will be required to submit a CAP Certificate Completion Form (<https://>

ucdenverdata.formstack.com/forms/historic_preservation_application/) upon successfully completing the certificate curriculum. Failure to submit this form will result in your certificate not being official certified or posted to your CU Denver transcript. Please only submit the form in the semester in which you are completing the certificate. Applications submitted for future semesters will not be accepted. **The CAP Certificate Completion Form does not replace the required graduation application for degree-seeking students.** If you are also completing a degree program in the current semester, you must follow the graduation procedures (<https://www.ucdenver.edu/student/registration-planning/apply-for-graduation/>) for your college.

Certificate Curriculum Requirements

Historic Preservation Certificate students will complete five graduate-level courses for a total of 15 hours. The following are the required courses for the certificate:

Code	Title	Hours
HIST 5232	Historic Preservation	3
HIPR 6210	Historic Buildings in Context	3
HIPR 6220	Adaptive Reuse: Business and Practice	3
HIPR 6310	Documentation, Analysis, Representation	3
Select one of the following:		3
HIPR 6510	Building Materials Conservation	
HIPR 6110	Regionalisms & the Vernacular	
HIPR 6410	Urban Conservation: Context for Reuse	
Total Hours		15

A minimum of a 3.0 GPA in the above course work is required to earn the Historic Preservation Certificate, and no grade below a B- will count toward the certificate.

Certificate Learning Outcomes

Student who successfully complete the Historic Preservation Certificate will be able to:

1. Be familiar with the philosophical foundations of preservation and possess a fundamental understanding of how to apply philosophical consideration in the preservation of the past.
2. Assess a building or site for its historical significance and develop a preservation strategy based on the level of significance.
3. Plan for the proper restoration or preservation of the building or site utilizing proper materials and methods.
4. Demonstrate awareness of environmental sustainability, social equity, and economic development and how to incorporate these issues into the practice of historic preservation.

Integrated Construction, Management + Leadership Graduate Certificate

Business School:
303.315.8110 or 303.315.8111
grad.advising@ucdenver.edu

College of Engineering, Design and Computing | Civil Engineering:
303.315.7160

civilengineering@ucdenver.edu

College of Architecture and Planning: Leo Darnell
303-315-1015
leonard.darnell@ucdenver.edu

Introduction

The College of Architecture and Planning, the College of Engineering, Design and Computing, and the Business School at the University of Colorado Denver have formed a partnership to create an innovative and interdisciplinary leadership program. The Integrated Construction, Management and Leadership (ICML) Certificate is a four-course certificate designed to launch designers, architects, engineers, and business entrepreneurs into the world of construction or rapidly update an existing skill-set.

As disciplinary identities, project boundaries, and conventional markets blur, leadership, management skills, and civic mindfulness are key aspects to successfully navigating a rapidly transforming 21st century built environment. Many new ideas are emerging around how projects are conceived and delivered that better integrate the complex relationships among finance, marketing, design, and construction. These new interdisciplinary management and construction techniques streamline the construction of increasingly large-scale and complex projects. Leadership skills are necessary for success in the central activities of contemporary engineering, architectural design firms, business, government, and non-profits. The demands of project management in firms today involve more than specific technical expertise in a given field. Firms need creative individuals who can effectively innovate, execute, and communicate across disciplines. This certificate program capitalizes on these changes and the new opportunities they present.

ICML is an interdisciplinary program designed for working or aspiring professionals, and upper-level students interested in expanding their knowledge base in the fields of engineering, architecture, business, and their intersections. The courses include introductions to and explorations of current trends in the construction industry, project management and building information modeling (BIM). The final course is an integrated course that brings together top executives in the architecture, engineering and construction (AEC) business to discuss current industry topics and provides students an opportunity to apply principles from the various fields to case study projects.

- Students can earn graduate-level credit for each course they successfully complete. If students have an undergraduate degree, they can earn the ICML Certificate upon completion of all four courses.
- They can take the courses as a non-degree student or while enrolled in a degree program at the University of Colorado Denver.
- The courses can be used to partially fulfill requirements for the MEng in Construction Engineering and Management or other eligible graduate programs such as the Master of Architecture degree upon acceptance into these programs.
- Approved courses in this Certificate may also count toward related Certificates offered by the Business School and Construction Engineering and Management.

Certificate Requirements

Code	Title	Hours
ARCH 6475	BIM/Flow of Information	3
BANA 6650	Project Management	3
or CEMT 6237	Advanced Project Management	
CEMT 6235	Advanced Construction Engineering	3
ARCH 6413	Construction Leadership	3
or CEMT 5238	Integrated Construction Leadership	
Total Hours		12

Note: A grade of B- or higher is required in all courses applied toward the certificate.

College of Arts & Media

Leadership

Dean

Laurence D. Kaptain, DMA and FRSA

Associate Dean

Mark Rabideau, DMA, Associate Dean of Academic and Faculty Affairs

Assistant Dean

Karen Ludington, MBA, Assistant Dean of Budget and Financial Systems

Contacts

Dean's Office

Arts Building, Suite 177
1150 10th Street
Phone: 303-315-7400
Fax: 303-315-7404
CAM@ucdenver.edu

Mailing Address:

College of Arts & Media
Campus Box 162
P.O. Box 173364
Denver, CO 80217-3364

National Center for Media Forensics:

Campus Box 154
P.O. Box 173364
Denver, CO 80217-3364
ncmf@ucdenver.edu

Overview

Mission

Our mission is to effect change by preparing students to successfully pursue their passions.

Our students acquire the skills they need to excel in an academically rigorous, experiential learning environment energized by creative exchange, real-world experience and diversity of voice.

Core Values

Creative Excellence - Academic and artistic rigor, creativity and innovation are bedrock principles of the CAM community and the cornerstone of how we define excellence. As champions of creative excellence in art making and artistic expression we support risk-taking, intellectual freedom and social responsibility.

Discovery - We believe in a culture of shared discovery. Our students learn by doing, and as emerging peers, are important contributors to the knowledge exchange. We value rigorous investigation, critical thinking, diversity, collaboration and invention.

Denver - We are committed to learning both inside and outside the classroom. The accessibility, diversity and cultural energy of Denver make CAM a better place to teach, work and learn. We strive to offer reciprocal experiences to the citizens of this great city and pay it forward by extending our reach and impact in the global community.

Facilities

CAM is constantly working to enhance and add to its facilities; see below for just some of the resources.

National Center for Media Forensics Facilities

- Computer lab featuring multimedia analysis and processing software such as Cognitech, Ocean Systems, DAC, Agnitio, iZotope Rx Advanced, Adobe Creative Cloud, MATLAB, EnCase, Cellebrite and Cedar Cambridge hardware/software systems
- Security DVR and camera lab
- Graduate student workstations accessible from anywhere in the world via Remote Desktop Connection
- ENF (Electric Network Frequency) databases around the US

College of Arts & Media Departments and Programs

- Music & Entertainment Industry Studies (p. 174)
 - Media Forensics, MS (p. 178)
 - Recording Arts, MSRA (p. 180)

CAM also offers a wide range of undergraduate degree options. Please see the Undergraduate Catalog (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-arts-media/>) or contact CAM@ucdenver.edu for more information.

College of Arts & Media Policies

Please see the Academic Policies (p. 59) and the Information for Graduate Students (p. 38) pages of this catalog for academic policies that apply to all students at the university. The policies that follow apply specifically to all graduate students in the College of Arts & Media. Contact recording arts or media forensics programs with any questions about these or other college/university policies.

Students must also follow the policies outlined in the Graduate School Policies and Procedures. Visit the Academic Policies (p. 59) page in this catalog and click on the link to access this reference.

Adding/Withdrawing from Courses After Census

Students wishing to add or withdraw from a full-term course after the semester add/drop deadline (census) should contact t (ncmf@ucdenver.edu) their program for guidelines and instructions.

Grade Appeals

For College of Arts & Media courses:

- When a student has questions or concerns regarding academic issues such as project grades, final grades, attendance policies, etc.,

the student is encouraged to speak directly with the faculty member teaching the course.

- If resolution or clarity of understanding is not reached, the following procedure should be followed:
 - The student contacts the chair of the department offering the course to discuss the concerns and his/her point of view.
 - The department chair speaks with the faculty member to ascertain the faculty member's point of view.
 - The department chair facilitates a meeting between the student and faculty member to discuss the issue.
 - If the student still has concerns after completion of these procedures, the student should contact the College of Arts & Media associate dean of academic and student affairs.

Incompletes

The College of Arts & Media has strict policies for granting incomplete grades. They include but are not limited to the following:

- Reason for incomplete must be a verifiable circumstance beyond the student's control that made completion of the course impossible. The student must provide documentation.
- The majority of course requirements (75 percent) must have been completed with a passing grade to be eligible for an incomplete (B (3.0) for courses toward recording arts; B- (2.7) for courses toward media forensics).
 - Whether the student has successfully completed 75% of the course with a passing grade is determined by the instructor and based on the requirements listed in the syllabus.
- CAM course completion agreement must be signed by both the instructor and student, with final approval by the dean's/advising office.
- All course work must be completed within one calendar year of the end of the original course, unless an earlier deadline is specified.
 - The final grade (earned by completing the course requirements) does not result in deletion of the incomplete (I) from the transcript. A second entry is posted on the transcript to show the final grade for the course, with a notation that the course was 'Originally graded as Incomplete.'
 - At the end of one year, I grades for courses that are not completed will automatically revert to an F.
- Requests for a retroactive change from a letter grade to an incomplete will not be considered.

The student is responsible for requesting an incomplete grade and submitting all of the appropriate paperwork and obtaining approvals. Please contact the program for additional information.

Curricular Changes and Course Substitutions

Graduate students fall under the degree requirements that were in place when they first enrolled in their programs. If a program revises its curriculum, students have the option of following their original degree requirements or the revised curriculum. Courses under the original requirements may no longer be taught or may not be available for a set duration. In this case, the department faculty will approve reasonable course substitutions.

Course substitutions in the graduate degree must be approved by the designated area head in the specific program area, the department chair and/or possibly the associate dean. Please contact the program for additional information.

Applying to Graduate

Students expecting to graduate are required to apply to graduate via UCDAccess by the published deadline. Students who do not apply by the deadline must apply to graduate for the following semester.

Applications will be accepted starting the first day of the student's registration for the semester in which the student plans to graduate. Applications are due by 5 p.m. on census date (the drop/add deadline) of the semester in which the student is applying to graduate, as noted on the published academic calendar. Students are encouraged to meet with a faculty advisor the semester before they intend to graduate to review graduation procedures and degree requirements.

Students who have not attended the university for one calendar year (three consecutive semesters, including summer term) or longer must gain readmission to the university prior to applying for graduation. It is the student's responsibility to apply with enough time for the readmission process to be finalized by the census date.

Academic Policies, Procedures and Curriculum Committee

The CAM Academic Policies, Procedures and Curriculum Committee is the appellate committee for all student-related academic petitions, issues and appeals. The committee is responsible for the evaluation and interpretation of the approved academic policies of the college. Questions about the interpretation of policies may be directed to CAM Advising and Student Services. Procedures and petition guidelines are available at the CAM website or by emailing the program.

Music & Entertainment Industry Studies

Chair: Richard Strasser
Office: Arts Building, Suite 288
Telephone: 303-315-7449
Fax: 303-315-7489
Email: CAM@ucdenver.edu
Website: <https://artsandmedia.ucdenver.edu/>

Overview

Music & Entertainment Industry Studies offers two graduate programs:

- Media Forensics, MS (p. 178)
- Recording Arts, MSRA (p. 180)

Programs

Music & Entertainment Industry Studies offers a master of science program:

- Media Forensics, MS (p. 178)
- Recording Arts, MSRA (p. 180)

Please see the Undergraduate Catalog (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-arts-media/music-entertainment-industry-studies/>) or contact CAM@ucdenver.edu for information about the Bachelor of Science (BS) in Music with emphases in performance, singer/songwriter, music business and recording arts.

Faculty

Associate Professors:

David Bondelevitch, MFA, University of Southern California

Lorne Bregitzer, MS, University of Colorado Denver

Catalin Grigoras, PhD, University Politehnica Bucharest

Sam McGuire, MS, University of Colorado Denver

Assistant Professor:

Cecilia Wu, PhD, University of California Santa Barbara

Contact the Department of Music & Entertainment Industry Studies for information about additional graduate program faculty.

Media Forensics (MSMF) Courses

MSMF 5000 - Experiential Lab (1 Credit)

Students will understand laboratory procedures and the application of A/V technology in the field and in analysis through professional conferences and site visits to crime labs and government agencies. Students will respond to experiences regarding presentation, demonstration, and discussion components. Restriction: Restricted to MFOR-MS students. Repeatable. Max hours: 5 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 5.

Restriction: Restricted to MFOR-MS students.

MSMF 5050 - Topics in Media Forensics (1-3 Credits)

Students learn theory and application through topical subjects designed to enhance theoretical and practical training in the analysis of forensic media. Emphasis will be placed on emerging technologies, methodological developments, and strengthening fundamental skills. These courses are repeatable for credit. Repeatable. Max hours: 5 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 5.

MSMF 5100 - Forensic Science and Litigation (3 Credits)

Critical analysis of legal precedent and court proceedings reveal to students the correlation between science and law in the litigation of forensic evidence. Assigned reading and research papers regarding evidence admissibility and scientific methodology will prepare students for evidence examination. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to MFOR-MS students.

Typically Offered: Fall.

MSMF 5150 - Research Practices in Media Forensics (3 Credits)

An introduction to practical research techniques and forensic science periodicals provides students with a foundation for projects and reports in subsequent classes and for the research thesis. Library resources, research design, writing styles, and information technology will be discussed. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to MFOR-MS students.

Typically Offered: Fall.

MSMF 5200 - Foundations in Media Forensics (3 Credits)

Students learn the foundational processes integral to forensic audio, video, and image analysis demonstrating knowledge through reading responses and documentation of procedures and methodology used in assigned projects. Topics include: media recording technology, analog/digital theory, multimedia compression, and equipment characterization. Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students.

Typically Offered: Spring.

MSMF 5250 - MATLAB Foundations (2 Credits)

An introduction to MATLAB workflow and its use in Media Forensics will be explored. Students will learn how to build program commands in scripts for signal analysis and to display graphical representations of data and statistics. Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 2 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students.

Typically Offered: Spring.

MSMF 5300 - Computer Forensics (3 Credits)

Students explore computer forensics through guided projects and group discussion. An overview of computer hardware/software and characterization of storage media and file types will be covered through mock evidence examination documenting the search, seizure, and acquisition of forensic media. Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 5350 - Mobile Phone Forensics (1 Credit)

Students learn concepts regarding the proper handling of mobile phones to ensure evidence integrity and approaches to address the ever-changing field. Students are prepared for the acquisition and analysis of forensic media on personal devices through exercises and group projects. Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 5400 - Forensic Audio Analysis (3 Credits)

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5450. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5450. Restriction: Restricted to MFOR-MS students.

Typically Offered: Fall.

MSMF 5450 - MATLAB for Forensic Audio Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5400. Restriction: Restricted to MFOR-MS students. Max hours: 1 Credit. Grading Basis: Letter Grade
Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5400. Restriction: Restricted to MFOR-MS students.
Typically Offered: Fall.

MSMF 5500 - Forensic Video and Image Analysis (3 Credits)

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5550. Restriction: Restricted to MFOR-MS. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5550. Restriction: Restricted to MFOR-MS.
Typically Offered: Spring.

MSMF 5550 - MATLAB for Forensic Video and Image Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response Non-Uniformity and the Bi-Dimensional DFT, students are prepared for image authenticity examinations. Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5500. Restriction: Restricted to MFOR-MS. Max hours: 1 Credit. Grading Basis: Letter Grade
Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5500. Restriction: Restricted to MFOR-MS.
Typically Offered: Spring.

MSMF 5600 - Report Writing and Court Testimony (3 Credits)

Students are prepared for expert witness testimony through the analysis of mock evidence, complimentary report preparation, and subsequent mock trial. This capstone experience will demonstrate a student's technical writing and presentation skills and exercise the creation of demonstrative materials. Prereq: MSMF 5500 and 5550 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: MSMF 5500 and 5550 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 6900 - Research Thesis in Media Forensics (4 Credits)

Students work closely with their thesis advisor in selecting a topic for original research and scientific publication. This capstone project creates an area of specialty for degree candidates. Approved materials are evaluated through report submission and thesis defense. Prereq: MSMF 5600 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 4 Credits.
Grading Basis: Letter Grade with IP
Prereq: MSMF 5600 with a B- or higher. Restriction: Restricted to MFOR-MS students.

Recording Arts (MRSA) Courses

MSRA 5000 - Introduction to Graduate Studies (3 Credits)

Surveys existing literature and research in science, technology, and pedagogy of recording arts. Extensive use of available resources in library, electronic and print, trade and scientific publications are explored. Use of computer applications for research and publication are developed. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5001 - MSRA Research Seminar (3 Credits)

In preparation for their thesis/portfolio, students learn research techniques by: applying skills from MSRA 5000, learning research design, performing research, interpreting results, and writing. Students will discover opportunities to add to the body of audio literature and recording techniques. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5500 - Topics in Professional Audio (1 Credit)

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5505 - Introduction to Audio Post Production (3 Credits)

Reviews all aspects of audio synchronized with picture, including music, sound effects, narration, and dialog replacement. Topics studied with respect to film, video and multi-media. Cross-listed with MUSC 3505. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5510 - Topics in Recording Arts (3 Credits)

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Max hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.
Typically Offered: Fall, Spring, Summer.

MSRA 5515 - History of 20th Century Film Music (3 Credits)

This survey of the history of 20th century music in film will acquaint aspiring filmmakers and musicians with a history of the music, as well as concepts of film theory and the creative use of film music. Restricted to RCDA-MS majors within the College of Arts and Media. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5525 - Multimodal Interaction for Music (3 Credits)

This course explores human-computer interaction in music composition and performance. Students will learn to program and use open-source hardware to build novel and creative musical interfaces and instruments. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Graduate level students

MSRA 5530 - Live Sound Reinforcement (3 Credits)

This course focuses on the basic elements of sound reinforcement: acoustics, equalization, equipment and mixing techniques. The major emphasis is the production of the final sonic product. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5535 - Sound Effects & Foley for Visual Media (3 Credits)

Techniques for recording sound effects in the field and recording Foley in the studio. Use of library effects. Use of mixing techniques and plug-ins to create more complex sounds. Cross-listed with MUSC 4535. Prereq: MSRA 5505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5545 - Music Editing in Visual Media (3 Credits)

Music editing for film and television. Spotting notes, temp tracks, cue sheets, scoring session management, dubbing stage fixes, and Performing Rights Artists notes. Cross-listed with MUSC 3545. Prereq: MSRA 5505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5550 - Audio Production III (3 Credits)

Advanced studies in sound recording and reinforcement, aesthetics and techniques of multi-track analog and digital recording and stereo imaging. Team lab recording projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5555 - Dialogue Editing & Mixing for Visual Media (3 Credits)

Dialogue editing and mixing for film and television. Recording Voiceover, Automated Dialogue Replacement, Group ADR, Efforts. Noise-reduction, mix levels, compression, limiting, EQ and use of reflected sound. Cross-listed with MUSC 3555. Prerequisite: MSRA 5505. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5560 - Mastering & Advanced Digital Audio (3 Credits)

A study and practice of the art of mastering. Topics covered include: history, monitoring, signal flow, metering, jitter, audio restoration, limiting, creating a CD pre-master, & mastering for new media. Students will get practical experience mastering their own projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5565 - Re-recording Mixing for Visual Media (3 Credits)

Techniques for mixing dialogue, ADR, music, sound effects, background ambiences and Foley. Different level standards and deliverables. Cross-listed with MUSC 4545. Prereq: MSRA 5535 or MSRA 5555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5535 or MSRA 5555.

MSRA 5575 - Graduate Surround Sound (3 Credits)

This lecture-lab course deals with surround sound in film, digital TV and DVD's. Topics include monitoring, microphone techniques, recording, mixing, mastering, delivery formats and psychoacoustics. Students work on two lab projects in the semester. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5576 - Surround Sound II (4 Credits)

Students will work on advanced surround sound projects and study mixing aesthetics, high-definition technology and authoring. Students will have advanced knowledge of these topics and produce professional, competitive material for their demo. Prereq: MSRA 5550, 5575 and 5505, or permission of instructor. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5580 - Graduate Audio Seminar I (3 Credits)

Faculty and majors of the music engineering program assemble to discuss and demonstrate issues of artistic and technical applications of recording technology. Student projects, faculty, and guest lectures provide topical focus. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5581 - Graduate Audio Seminar II (3 Credits)

Capstone project based course in which students complete professional quality projects in music production and/or post production. Students refine their engineering skills and develop new skills required for integration in the music industry such as portfolio design and resume development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5590 - Graduate Audio Production (3 Credits)

Deals with advanced audio skills for music recording, including technical and artistic considerations. This is a required course for the MSRA degree. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5600 - Topics in Music (1-3 Credits)

Various topics relating to the study of music performance, music technology and music business. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MSRA 5605 - Audio Post Production II (3 Credits)

Students will learn advanced Pro Tools techniques by designing, conceptualizing, and completing sound for a student film project. This interdisciplinary course prepares students for working relationships between Recording Arts, Film and Video areas and an entry level job in post production. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5820 - Digital Music Techniques (3 Credits)

Studies the general principles and applications of digital music technology, emphasizing the function and operation of specific computer software. Topics include digital audio workstations, MIDI sequencers, digital signal processing programs, and distribution on optical discs and computer-based mediums. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5840 - Independent Study for MSRA (1-3 Credits)

Allows graduate students to pursue in-depth study of an audio-related topic, to be discussed with and approved by the Graduate Advisor. A final report or other tangible results will be determined on a case- by-case basis. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

MSRA 6214 - Forensic Audio Analysis (3 Credits)

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Coreq: MSRA 6254 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: MSRA 6254

MSRA 6224 - Forensic Video and Image Analysis (3 Credits)

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Coreq: MSRA 6264 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: MSRA 6264

MSRA 6254 - MATLAB for Forensic Audio Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Coreq: MSRA 6214 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: MSRA 6214

MSRA 6264 - MATLAB for Forensic Video and Image Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response Non-Uniformity and the Bi-Dimensional DFT, students are prepared for image authenticity examinations. Coreq: MSRA 6224 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: MSRA 6224

MSRA 6510 - Graduate Audio Studies Pedagogy (3 Credits)

Surveys available resources for audio education. Interdisciplinary materials in physics, acoustics, engineering, music, broadcast, medicine, psychology, multi-media, theater, and film or video are reviewed. Emphasis on design and development of new methods and materials are pursued. (MSRA graduate students only.) Prereq: MUSC 5000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 6550 - Sound Design (4 Credits)

Deals with designing sound for live theater, film, video, television, theme parks, games and soundscapes. Focuses on using technology to achieve specific esthetic aspects of audio production. This is accomplished through lectures, listening assignments, research and lab practice. (For graduate students only.) Max hours: 4 Credits.

Grading Basis: Letter Grade

MSRA 6950 - Thesis in Professional Audio (4 Credits)

With the guidance of a thesis advisor, each candidate for the MSRA degree select an approved topic for scholarly review, research and publication. The approved materials are evaluated for written and oral defense. Prereq: MUSC 5000, 5590, 6510, 6580, 6530. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 6951 - Professional Audio Portfolio Thesis (4 Credits)

With the guidance of a portfolio advisor, each candidate for the MSRA degree produce specified documentation and audio materials that reflect the career intentions of the candidate. A completed "Show kit" or professional "Demo" of the candidate's specialty are produced. The approved materials are evaluated for written, audio and oral defense. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

Media Forensics, MS

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) (p. 174) to see general Music & Entertainment Industry Studies information.

Introduction

The Master of Science in Media Forensics (MSMF) prepares students from various backgrounds for work in the field of forensic audio, video and image analysis, utilizing the state-of-the-art methods and technology necessary to fight crime in the digital age. Housed in the National Center for Media Forensics (NCMF), this program is unique in providing a hybrid format (online and onsite) graduate education in forensic multimedia analysis.

Students from related disciplines (media production, electrical engineering, forensics, computer science, etc.) are encouraged to apply, as this program enhances scientific inquiry while guiding students through a cohort curriculum. The hybrid delivery format affords students the ability to work full-time while completing most of the program online with additional onsite study at the NCMF and its partner institutions. Classes are comprised of online self-guided lectures, interactive learning, discussion boards, reading responses and scheduled video conferencing. Onsite course work provides students hands-on and practical experiences which augment and enrich the curriculum. Additionally, experiential learning activities include visits to regional crime labs and scientific conferences to understand the application of forensic media technology and laboratory procedures.

Courses lead students through three areas of study: foundational knowledge, core analyses and capstone experiences, which fully prepare students for research in forensic science and expert witness

testimony. Digital media evidence acquisition through computer forensics applications is emphasized in an environment that fosters creativity and individual skills. The research thesis on a topic of the student's choosing is conducted under the advisement of the Director of the NCMF with input from forensic professionals from around the world. The thesis is a topic of exploration throughout the program and serves to enhance a graduate's area of specialty as they prepare for work in private forensic practice, corporate research and development, academic research and teaching, or crime labs at the local, state and federal levels.

MS Media Forensics Application

Admission to the MSMF program is competitive. The MSMF program accepts students in the fall only. Admission decisions are made by committee and are based on the entirety of the applicant's submitted materials. Admission to the program is contingent upon:

- Formal documentation of an earned bachelor's degree in a related field. (International students must document an equivalent.) Undergraduate degrees from other disciplines will be considered with proper support from application components.
- Successful completion of the Graduate Record Exam (GRE) General Test.
- For international students, submission of proof of English Language Proficiency. Please contact the Office of International Admissions (p. 44) for more information.
- Strength of application components as they relate to:
 - Scientific competency
 - Writing skills
 - Desire to work in the field of forensic media analysis
 - Strength of academic/professional background
 - Strength of references through letters of recommendation

Application Components

Required application components include:

- Graduate Application for Admission
- Application Fee
- Entrance Examinations: GRE (and TOEFL/IELTS or other evidence of English proficiency, if applicable)
- Official Transcripts
- Cover Letter
- Resume
- Three (3) Letters of Recommendation
- Two (2) Technical Writing Samples

Applications that do not include all of the requirements or that include partial components are considered incomplete and will not be reviewed.

International applicants are encouraged to visit the Office of International Admissions website for detailed information.

Application requirements are subject to change. Refer to the National Center for Media Forensics MSMF program website for detailed information and updates regarding the application process and requirements.

Curriculum

The MSMF program comprises 33 semester hours of credit: 29 hours are required courses and 4 hours are thesis. All courses must be completed

with a grade of B- (2.7) or better and students must maintain at least a 3.0 cumulative GPA. Grades of C+ (2.3) or lower, or a cumulative GPA below 3.0, will result in the student's dismissal from the program. Students are admitted to the program in the fall as a cohort, and must follow the curriculum in sequence.

Code	Title	Hours
Program Sequence		
MSMF 5100	Forensic Science and Litigation	3
MSMF 5150	Research Practices in Media Forensics	3
MSMF 5000	Experiential Lab	1
MSMF 5200	Foundations in Media Forensics	3
MSMF 5250	MATLAB Foundations	2
MSMF 5300	Computer Forensics	3
MSMF 5350	Mobile Phone Forensics	1
MSMF 5000	Experiential Lab	1
MSMF 5400	Forensic Audio Analysis	3
MSMF 5450	MATLAB for Forensic Audio Analysis	1
MSMF 5000	Experiential Lab	1
MSMF 5500	Forensic Video and Image Analysis	3
MSMF 5550	MATLAB for Forensic Video and Image Analysis	1
MSMF 5600	Report Writing and Court Testimony	3
MSMF 6900	Research Thesis in Media Forensics	4
Total Hours		33

Program Sequence

Course	Title	Hours
Year 1		
Fall		
MSMF 5100	Forensic Science and Litigation	3
MSMF 5150	Research Practices in Media Forensics	3
Hours		6
Spring		
MSMF 5000	Experiential Lab	1
MSMF 5200	Foundations in Media Forensics	3
MSMF 5250	MATLAB Foundations	2
Hours		6
Summer		
MSMF 5300	Computer Forensics	3
MSMF 5350	Mobile Phone Forensics	1
Hours		4
Year 2		
Fall		
MSMF 5000	Experiential Lab	1
MSMF 5400	Forensic Audio Analysis	3
MSMF 5450	MATLAB for Forensic Audio Analysis	1
Hours		5
Spring		
MSMF 5000	Experiential Lab	1
MSMF 5500	Forensic Video and Image Analysis	3
MSMF 5550	MATLAB for Forensic Video and Image Analysis	1
Hours		5

Summer		
MSMF 5600	Report Writing and Court Testimony	3
	Hours	3
Year 3		
Fall		
MSMF 6900	Research Thesis in Media Forensics	4
	Hours	4
	Total Hours	33

Recording Arts, MSRA

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) (p. 174) to see general Music & Entertainment Industry Studies information.

Introduction

Recording arts is a field that deals with all aspects of recorded music and sound, including mixing, mastering, production, MIDI sequencing, live sound reinforcement, and post-production for film and video. The program refines students' skills in sound recording, aesthetics, multi-track recording, analog and digital signal processing, automated mixing, synchronization, stereo and surround imaging, mastering and post-production.

The Master of Science in Recording Arts (MSRA) has the only pedagogy track in the nation. Pedagogy is synonymous with teaching, and the MSRA includes a survey of available resources for audio education. The curriculum offers an interdisciplinary approach, which can include physics, acoustics, engineering, music recording, psychoacoustics, multimedia, theatre and film/video. The program emphasizes design and development of new methods and materials.

This graduate degree is designed to:

- prepare students for audio careers in mass communications, education, music, multimedia and the entertainment industries.
- enhance advancement of professionals in their careers.
- prepare the music educators of the future.

In their final semester, students will create and defend a thesis or a portfolio.

- *Thesis* -- Written research
- *Portfolio* -- Research in conjunction with a recorded work. This could be a music recording, audio for video, or other media.

Graduate courses comprising the core of the program advance students' artistic, pedagogical, technical and problem-solving abilities. Elective courses allow each student to develop additional skills and knowledge in related areas, including surround sound, acoustics, studio design, digital signal processing and others.

The Department of Music & Entertainment Industry Studies encourages students from allied disciplines (music, physics, engineering, etc.) to apply. Students are not required to have their bachelor's in recording arts; the bachelor's degree can be from any discipline. Applicants can qualify for the MSRA program by having equivalent level preparation (e.g., work experience). Candidates without sufficient experience/training

in recording arts may be required to take preparatory courses at the undergraduate level.

Note: The application process and requirements for the MSRA program differ from those listed for the media forensics emphasis.

MSRA Application Components

Admission to the MSRA program is competitive. Applications are accepted for fall-only admission to the cohort. Admission decisions are made by committee and are based on the entirety of the applicant's submitted materials. Incomplete applications are not considered, and application requirements may vary between domestic and international students.

- Graduate Application for Admission
- In-State Tuition Classification Application (if applicable)
- Application Fee
- Entrance Examinations: (TOEFL/IELTS or other evidence of English proficiency, if applicable)
- Official Transcripts
- Three (3) Letters of Recommendation
- Application Essay
- Resume
- Portfolio

Applications that do not include all of the requirements or that include partial components are considered incomplete and will not be reviewed.

International applicants are encouraged to visit the Office of International Admissions (p. 44) website for detailed information.

Refer to the MSRA website for deadlines, detailed information and updates regarding the application process and requirements.

Required Courses

Code	Title	Hours
Required Courses		
MSRA 5000	Introduction to Graduate Studies	3
MSRA 5001	MSRA Research Seminar	3
MSRA 5580	Graduate Audio Seminar I	3
MSRA 5590	Graduate Audio Production	3
MSRA 6510	Graduate Audio Studies Pedagogy	3
MSRA 6950	Thesis in Professional Audio	4
	or MSRA 6951 Professional Audio Portfolio Thesis	
Electives		
Select 15 semester hours of the following: ¹		15
MSRA 5500	Topics in Professional Audio	
MSRA 5505	Introduction to Audio Post Production	
MSRA 5530	Live Sound Reinforcement	
MSRA 5560	Mastering & Advanced Digital Audio	
MSRA 5575	Graduate Surround Sound	
MSRA 5605	Audio Post Production II	
MSRA 5820	Digital Music Techniques	
MSRA 5840	Independent Study for MSRA	
Total Hours		34

¹ Students may take courses not listed here upon approval of the faculty or academic advisor.

Students should plan to graduate in a minimum of four semesters. Students can apply for graduation in any semester (fall, spring or summer), provided they have completed the required course work. All course work must be completed with a satisfactory grade of "B" (3.0) or higher. Students should not register for thesis/portfolio unless approved by the faculty advisor.

Please refer to the MSRA website (<https://artsandmedia.ucdenver.edu/areas-of-study/music-entertainment-industry/about-music-entertainment-industry-studies/>) for additional information.

College of Engineering, Design and Computing

Leadership

Dean

Martin Dunn, Dean of the College of Engineering, Design and Computing

Associate Deans

Douglas Sicker, Senior Associate Dean of Computing Initiatives

Kristin Wood, Senior Associate Dean of Innovation and Engagement

Mark Golkowski, Associate Dean of Education and Student Success

Assistant Dean

Petrina Morgan, Assistant Dean of Administration

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College of Engineering, Design and Computing

Campus Box 104

P.O. Box 173364

Denver, CO 80217-3364

Overview

The College of Engineering, Design and Computing at the University of Colorado Denver meets the needs of the Denver metropolitan area by providing nationally accredited engineering education programs in a flexible format that suits both students and employers. Recognizing the importance for students to pursue professional studies and related employment simultaneously, the college offers undergraduate and graduate degree programs in bioengineering, civil engineering, mechanical engineering, electrical engineering and computer science through late afternoon and evening studies or through a more traditional schedule of day classes. As a practicing engineer, you can improve and update your professional capabilities and earn a graduate degree. Or, through our interdisciplinary master of engineering degree, you can obtain graduate education in business, management, computer science, behavioral science or other areas together with new engineering skills in your field.

A listing of the fields in which engineers work would have hundreds of entries. The following list is a brief summary of the engineering fields available at CU Denver.

Bioengineering offers opportunities for interdisciplinary graduate training for master of science and doctor of philosophy degrees. Our programs are uniquely integrated with the CU Anschutz Medical Campus. Students enjoy opportunities to learn from clinicians and engineers and to perform research or medical device design in world-class hospitals and clinical research labs. Bioengineering is one of the fastest growing job markets this decade, according to the Bureau of Labor Statistics. A degree in this area provides numerous opportunities to work in health care, biomedical industry, government regulatory agencies and academia.

Civil engineering offers interesting and challenging careers in the design and construction of buildings, bridges, dams, aqueducts and other structures; in transportation systems including highways, canals, pipelines, airports, rapid transit lines, railroads and harbor facilities; in the distribution of water and the regulation of rivers; in the development of water resources for urban use, industry and land reclamation; in the control of water quality through water purification and proper waste treatment; in the construction and contracting industry; and in the problems concerned with our physical environment and the growth of cities.

Computer science offers graduates the solid foundation needed for jobs in computing and enabling technology encompassing many areas across diverse fields such as healthcare, business, natural & applied sciences, mathematics and visual arts. Career paths in computer science involve designing and implementing software, devising new computer applications and developing effective ways to solve computing problems.

Electrical engineering's graduate program prepares students for technical leadership roles in industry, academia and government in our rapidly changing technological world. The program offers numerous specialties within electrical engineering, including computer engineering, embedded systems, electromagnetics, microwave systems, optics, electrical neuroscience engineering, control systems, communications and signal processing, power systems, smart grids, renewable energies, VLSI system design, and electron devices.

Mechanical engineering offers a wide range of interesting and challenging career opportunities in research, design, development, manufacturing, testing and marketing for either private industry or government. Mechanical engineers help develop a wide range of products such as engines, transmissions, compressors, pumps, oil field drilling rigs, missiles, space satellites, earth-moving equipment, container-manufacturing machines, medical equipment and many other products encountered in daily life.

Graduate Study in Engineering

The College of Engineering, Design and Computing offers graduate programs in bioengineering, civil engineering, computer science and engineering, electrical engineering and mechanical engineering, as well as an interdisciplinary doctoral degree in engineering and applied science.

For information regarding courses and requirements leading to the master of science, master of engineering or the PhD degree, see the appropriate discipline heading in this section. For general graduate admission information and policies, see the Information for Graduate Students (p. 38) section of this catalog.

TOEFL/Language Requirements

For the most up-to-date information about TOEFL/language requirements, please visit the Office of International Admissions website (<https://www.ucdenver.edu/international-admissions/apply-for-admission/>).

Education for Employed Professional Engineers

Continuing education for employed engineers grows more important each year. Therefore, the college puts great emphasis upon making graduate courses available through late afternoon and evening courses. The master of engineering degree permits graduate students more flexibility in defining specialized interdisciplinary fields that meet their professional needs. This degree has standards equivalent to those of the master of science degree.

Nondegree Students

Nondegree graduate students may apply 9 semester hours of graduate-level course work toward a master's degree in engineering from CU Denver.

College of Engineering, Design and Computing Admissions Information

Application Deadlines

Applicants must make arrangements to ensure all their materials (including transcripts, references, and any required test scores) are received by the relevant deadlines below. Applications with outstanding materials are considered incomplete and will be canceled unless a request for deferment to a later term is requested.

Bioengineering

- MS: July 15 (fall), Dec. 15 (spring)
- PhD: December 1 (fall admittance only)

Civil Engineering

- MS/MEng: April 15 (fall), September 15 (spring)
- PhD: March 15 (fall), September 15 (spring)

Computer Science

- MS: April 15 (fall), October 15 (spring)
- CSIS PhD: March 15 (fall), September 15 (spring)

Electrical Engineering

- MS/MEng: April 15 (fall), October 15 (spring)
- PhD: March 15 (fall), September 15 (spring)

Mechanical Engineering

- MS/MEng: April 15 (fall), October 15 (spring)
- PhD: March 15 (fall), September 15 (spring)

Engineering and Applied Science PhD

- March 15 (fall), September 15 (spring)

College of Engineering, Design and Computing Departments and Programs

Courses listed in the following curricula are typical illustrations. Changes in specific courses may be necessary to accommodate students' needs and/or changes in institution requirements; students should take courses in logical sequence.

Departments & Programs

- Bioengineering (p. 182)
 - Bioengineering Dual, MS-MBA (p. 186)
 - Bioengineering, MD-MS (p. 186)
 - Bioengineering, MD-PhD (p. 186)
 - Bioengineering, MS (p. 186)
 - Bioengineering, PhD (p. 186)
- Civil Engineering (p. 186)
 - Civil Engineering, MS and MEng (p. 197)
 - Civil Engineering, PhD (p. 198)
 - Construction Project Management Graduate Certificate (p. 199)
 - Engineering and Applied Science, PhD (p. 199)
 - Geographic Information Systems and Geomatics Graduate Certificate (p. 200)
 - Integrated Construction, Management + Leadership Graduate Certificate (p. 200)
- Computer Science and Engineering (p. 201)
 - Computer Science and Information Systems, PhD (p. 211)
 - Computer Science, MS (p. 212)
 - Cybersecurity and Defense Graduate Certificate (p. 213)
 - Engineering and Applied Science, PhD (p. 214)
 - Software Engineering Graduate Certificate (p. 214)
- Electrical Engineering (p. 214)
 - Electrical Engineering, MEng (p. 222)
 - Electrical Engineering, MS (p. 222)
 - Engineering and Applied Science, PhD (p. 223)
- Engineering and Applied Science, PhD (p. 223)
- Inworks (p. 224)
 - Human-Centered Design and Innovation Graduate Certificate (p. 227)
- Mechanical Engineering (p. 227)
 - Engineering and Applied Science, PhD (p. 231)
 - Mechanical Engineering, MEng (p. 232)
 - Mechanical Engineering, MS (p. 232)

Bioengineering

Chair: Robin Shandas

Office: Room 1307K Bioscience 2 - building Y18 (Anschutz Medical Campus)

Telephone: 303-724-5893

Fax: 303-724-5800

E-mail: bioengineering@cuanschutz.edu

Website: engineering.ucdenver.edu/bioengineering (<http://engineering.ucdenver.edu/bioengineering/>)

Overview

Mission Statement

The Department of Bioengineering bridges the fields of engineering and medicine with a core mission of applying engineering principles and analyses to improving human health. The department will fulfill this

mission by providing opportunities for training, research, and service in bioengineering to faculty, students, and residents of Colorado and the greater Rocky Mountain region.

Program Objectives

The Department of Bioengineering offers high-quality training in bioengineering that is both flexible and multidisciplinary. A design-based focus permeates every aspect of our training philosophy which can be summarized by the following question: what does the user want and how can I best utilize my bioengineering training to achieve this need? Our academic instruction focuses on developing core competencies in life sciences, quantitative methods, technology, and research methods.

Graduate Program

All graduate students begin the program with intensive study of the bioengineering core. In consultation with an advisor, each student chooses elective courses, training pathways, and research to fit talents, preparation, and career plans. Students earn the MS, MS-MBA, MD-MS, MD/PhD, or PhD degree in bioengineering with a choice of training pathways in basic research, clinical applications, or commercialization of medical technologies. Graduate School Policies and Procedures (p. 59) apply to all programs. Please consult our website (ucdenver.edu/bioengineering (<http://www.ucdenver.edu/bioengineering/>)) for more information on admissions requirements, degree requirements, core courses, training pathways and faculty research areas.

Programs

- Bioengineering Dual, MS-MBA (p. 186)
- Bioengineering, MD-MS (p. 186)
- Bioengineering, MD-PhD (p. 186)
- Bioengineering, MS (p. 186)
- Bioengineering, PhD (p. 186)

Faculty

Professors

Robin Shandas, PhD robin.shandas@cuanschutz.edu
Specialties: Novel methods for translational bioengineering

Keith Neeves, PhD keith.neeves@cuanschutz.edu
Specialties: Hematology and oncology

Associate Professors

Richard Benninger, PhD richard.benninger@cuanschutz.edu
Specialties: Optical microscopy, pancreatic islet biology and biophysics, diabetes

Cathy Bodine, PhD cathy.bodine@cuanschutz.edu
Specialties: Assistive technology, rehabilitation engineering

Kendall Hunter, PhD kendall.hunter@cuanschutz.edu
Specialties: Soft tissue mechanics, vascular and cardiac imaging diagnostics, translational biomechanics

Daewon Park, PhD daewon.park@cuanschutz.edu
Specialties: Biomaterials, drug delivery, tissue engineering and regenerative medicine

Research Associate Professors

Richard Weir, PhD richard.weir@cuanschutz.edu

Specialties: Neural engineering, biomechatronic design, and rehabilitation engineering

Associate Clinical Professor

Michael Yeager michael.yeager@cuanschutz.edu
Specialties: Cardiopulmonary disease, autoimmunity, in vivo cell lineage tracing & imaging

Assistant Professors

Emily Gibson, PhD emily.gibson@cuanschutz.edu
Specialties: Microfluidics technology, optical microscopy, and spectroscopy

Jeffrey Jacot, PhD jeffrey.jacot@cuanschutz.edu
Specialties: Stem cells and heart tissue engineering

Chelsea Magin, PhD chelsea.magin@cuanschutz.edu
Specialties: Bio-inspired materials for tissue engineering, R & D product development

Bradford Smith, PhD bradford.smith@cuanschutz.edu
Specialties: Lung structure-function relationships, optimized mechanical ventilation, and high performance computing

Assistant Research Professors

Vitaly Kheyfets, PhD vitaly.kheyfets@cuanschutz.edu
Specialties: Vascular/ventricular function, cellular metabolism in cardiovascular disease, and pulmonary hypertension

Brisa Pena, PhD brisa.penacastellanos@cuanschutz.edu
Specialties: Material science, atomic force microscopy, cardiac tissue engineering, and miRNA delivery

Instructors

Cassandra Howard, MSC cassandra.howard@cuanschutz.edu
Specialties: Medical device innovation and biodesign

Steven Lammers, PhD steven.lammers@cuanschutz.edu
Specialties: 3D printing & design, bioprintable materials, tissue engineering of 3D cellularized scaffolds

Jennifer Wagner jennifer.wagner@cuanschutz.edu
Specialties: Medical imaging, 3D modeling, surgical guides/tools, tissue engineering, and material characterization

Affiliated Faculty

Students receive instruction from affiliate faculty in the University of Colorado system, including CU Boulder and the CU School of Medicine. Faculty research areas include imaging and biophotonics, cardiovascular biomechanics and hemodynamics, orthopedic biomechanics, neuromuscular control and assistive technology, surgery and urological sciences, ophthalmology, neuroscience engineering, polymers and diabetes. Please consult our website (ucdenver.edu/bioengineering (<http://www.ucdenver.edu/bioengineering/>)) for more information.

Bioengineering (BIOE) Courses

BIOE 5010 - Cell and Molecular Biology for Bioengineers (3 Credits)

Introduction to cellular and molecular biology, with a focus on using engineering methods and literature to analyze structure and function of cells throughout lifecycle and multiple scales. Design experiments to test hypotheses. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5011 - Systems Physiology for Bioengineers (3 Credits)

Use engineering principles to study key physiological systems. Topics: cardiovascular, neuroscience, urological, or renal medicine. Related engineering principles: pressure-flow relationships, stress-strain, electromechanical coupling and signal transduction. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5020 - Analytics and Machine Learning in Bioengineering (3 Credits)

This course provides mathematical tools essential for graduate level bioengineering work. Studies selected topics from probability, linear algebra, and vector calculus, with emphasis on bioengineering applications. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5021 - Numerical Methods for Engineering Analysis (3 Credits)

Provides computational skills and knowledge of numerical methods for engineering/scientific computation using Matlab. Topics: root finding, interpolation, difference and integration rules, solution of initial and boundary value ODEs, and introduction to the solution of PDEs. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5039 - Mechatronics and Embedded Systems (3 Credits)

The course focuses on the design and construction of microprocessor-controlled electro-mechanical systems. Lectures review critical circuit topics (Ohm's law, RLC circuits, DC and AC signals, diode and transistor circuits, operational amplifiers, and digital signals), introduce microprocessor architecture and programming, discuss sensor and actuator component selection, robotic systems, and design strategies for complex, multi-system devices. Lab work reinforces lectures and allows hands-on experience with robotic and embedded systems design. Students must design and build an embedded systems device related to assistive technology. Note: Project expenses may be incurred (\$50 maximum). Cross-listed with BIOE 4039. Restriction: Restricted to graduate students in the Department of Bioengineering. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5040 - Research Methods for Bioengineers (2 Credits)

This course provides an introduction to research methods for bioengineers in order to prepare for basic research, clinical applications and commercialization of medical technologies. Topics include literature review, regulatory policy. Prerequisite: Graduate standing in Bioengineering (MS/PhD). Max Hours: 2 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

BIOE 5041 - Clinical Experiences for Bioengineers (1 Credit)

This course provides opportunities for clinical experiences such as observing surgeries and touring intensive care units to prepare students for clinical applications and foster collaborations with clinical practitioners. Experiences take place through the school year. Prerequisites: Graduate standing in Bioengineering (MS/PHD).

Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Typically Offered: Fall.

BIOE 5053 - Optics & Microscopy in Biomedical Research (3 Credits)

Graduate overview of optical imaging, ranging from classical microscopy to advanced non-linear techniques and includes theory, technology and applications in biomedical sciences. This will prepare students for developing and applying state-of-the-art optical imaging in their research. Cross-listed with BIOE 4053. Prereq: Grad standing or permission from the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5054 - Regulatory Affairs (3 Credits)

This course covers standards of quality assurance and regulatory pathways that guide biomedical engineering industry. Cross-listed with BIOE 4054. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5057 - Rehabilitation and Assistive Technology (3 Credits)

This course provides students with an overview of technologies and their use by and for persons with disabilities. Cross-listed with BIOE 4057. Restriction: Restricted to students with BIOE designation, or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5058 - Intro to Design, Disability, and Aging (3 Credits)

This course provides an introduction to the topic of disability and aging and the application of bioengineering principles for persons living with functional impairment(s) across the lifespan. Cross-listed with BIOE 4058. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5063 - 3D Modeling for Bioengineers (3 Credits)

Course instills 3D modeling skills specific to biomedical industry. Topics include computer aided design, medical imaging, image processing, patient specific image to three-dimensional model reconstruction, non-uniform rational b-spline surfaces, finite element, computational fluid dynamics analyses, physical modeling using rapid prototyping. Restrictions: Matriculated CEDC students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

BIOE 5064 - Advanced MatLab For Bioengineers And Life Scientists (3 Credits)

MatLab programming for graduate bioengineers and life scientists. Topics include MatLab syntax and optimization as well as techniques for working with scalars, time-series, images and multi-dimension datasets. Surface/Curve fitting, modeling, automation and classification will be covered. Cross-listed with BIOE 4064. Max Hours: 3 Credits. Grading Basis: Letter Grade

BIOE 5067 - Human Factors and Usability Testing for Bioengineers (3 Credits)

This course provides an introduction to human factors testing and evaluation in the context of medical devices and assistive technology (AT). Particular focus will be given towards designing and applying usability testing to inform product design decisions or improvements. Topics include human factor considerations for aging and disabled populations (and their care providers), usability techniques, user experience data collection and interpretation, etc. Students will engage in hands-on human factors assessments such as contextual inquiry of surgery patients, cognitive walkthroughs with simulating disability, and product usability testing and iteration. Max hours: 3 Credits. Grading Basis: Letter Grade

BIOE 5068 - Introduction to Medical Imaging (3 Credits)

This course will introduce graduate students to the basic physics, technologies, and clinical methodologies underlying Ultrasound, MRI, CT, PET and SPECT imaging systems. The course will include lectures, and visits to campus hospital and research imaging systems as well as hands on ultrasound labs. Cross-listed with BIOE 4068. Restriction: Restricted to Bioengineering students with graduate student status. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5069 - Advanced Biomechanics for Graduates (3 Credits)

This course covers advanced topics such as blood flow dynamics, introduction to non-linear finite deformation techniques, blood rheology, and computational techniques. Restriction: Restricted to Bioengineering students with graduate student status, or by Permission of Instructor. Crosslisted with BIOE 4069. Max Hours: 3 credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

BIOE 5073 - Neural Interfaces and Bionic Limbs (3 Credits)

This course will introduce graduate students to topics in neural interfaces (Brain machine interfaces, peripheral nerve interfaces etc), the issues involved in the design of mechatronic limb systems and the decoding algorithms used to map the neural interface to the mechatronic limb. Cross-listed with BIOE 4073. Restrictions: Matriculated CEDC students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

BIOE 5074 - Introduction to Laboratory Animal Research (3 Credits)

This course provides basic theoretical and practical knowledge on the use of the most common laboratory animal species, animal models and welfare, general concepts on animal biology and husbandry, and essential principles of anesthesia, analgesia, surgery and peri operative care. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5083 - Polymers in Biomedical Applications (3 Credits)

This course will introduce graduate students to fundamental synthetic method and basic characteristics of various polymeric biomaterials and their crucial roles in different biomedical applications. It will also cover how the polymers can be modified to enhance biomedical applications. Cross-listed with BIOE 4083. Prereq: Graduate standing at CU Denver or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5420 - Special Topics in Bioengineering (1-6 Credits)

Special topics of particular interest to graduate students in Bioengineering. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

BIOE 5840 - Independent Study in Bioengineering (1-6 Credits)

Graduate level independent study in Bioengineering with a faculty mentor. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

BIOE 5939 - Graduate Internship (1-6 Credits)

Department of Bioengineering Internship. Credit may not be applied toward the MS in Bioengineering degree. Enrollment by department permission only. Max Hours: 6 Credits.

Grading Basis: Letter Grade

BIOE 6655 - Foundations of Doctoring MS Years (1-5 Credits)

This course is for CU MD-MS students who are on leave of absence from SOM and wish to maintain clinical exposure and training during the leave. Prereq: Phase I & II SOM classes and graduate standing in BIOE. Repeatable. Max Hours: 20 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 20.

Restriction: Restricted to BIOE graduate majors within the College of Engineering, Design and Computing

BIOE 6950 - Masters Thesis (1-6 Credits)

Research for Master Thesis under supervision of faculty thesis advisor. Prerequisites: Consent of thesis advisor. Restrictions: Satisfactory progress toward MS-Bioengineering degree. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

BIOE 6960 - Master's Project (1-6 Credits)

Training for Master's Project under the supervision of faculty project advisor. Prereq: Department Consent. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

BIOE 8990 - Doctoral Dissertation (1-10 Credits)

Research for doctoral dissertation under supervision of faculty advisor.
Prerequisites: Consent of dissertation advisor. Restrictions: Satisfactory progress toward PhD-Bioengineering Degree. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

Bioengineering Dual, MS-MBA

Introduction

We offer a dual MS-MBA in partnership with the CU Denver Business School (p. 60). Please contact either program for more information and advising. Students registered in other MS programs in the University of Colorado system may be able to combine the two degrees; please contact us at bioengineering@ucdenver.edu for more information.

Graduate School Policies and Procedures (p. 59) apply to this program.

Bioengineering, MD-MS

Introduction

We offer an MD-MS in bioengineering in partnership with the University of Colorado Anschutz Medical Campus School of Medicine (<http://catalog.ucdenver.edu/cu-anschutz/schools-colleges-programs/school-medicine/>). This dual degree option is available to current CU medical students only. Prospective students should contact the department at bioengineering@ucdenver.edu as early in their medical school training program as possible for more information and advising.

Bioengineering, MD-PhD

Introduction

For students already enrolled or accepted into the Medical Scientist Training Program (MSTP) in the School of Medicine (<http://catalog.ucdenver.edu/cu-anschutz/schools-colleges-programs/school-medicine/>) at the University of Colorado Anschutz Medical Campus. Degree completion in 7-8 years with highly individualized training pathway and a multidisciplinary research dissertation. Please contact us for advising.

Graduate School Policies and Procedures (p. 59) apply to this program.

Bioengineering, MS

Overview

The master of science degree is offered to students with an undergraduate degree in the life sciences or engineering. Students complete the degree in 18 months to two years with the choice of a project or thesis, either of which may be completed in academia or industry. Program details are available on the Department of Bioengineering website at ucdenver.edu/bioengineering (<http://www.ucdenver.edu/bioengineering/>).

Graduate School Policies and Procedures (p. 59) apply to this program.

Bioengineering, PhD

Introduction

The PhD is offered to students with an undergraduate or master's degree in engineering or the life sciences. Students complete the degree in three to five years with a highly individualized training pathway. All PhD students complete a dissertation, which may have an industry component.

Visit our website- ucdenver.edu/bioengineering (<http://www.ucdenver.edu/bioengineering/>) or contact us at bioengineering@ucdenver.edu for more information.

Graduate School Policies and Procedures (p. 59) apply to this program.

Civil Engineering

Chair: Kevin L. Rens

Office: North Classroom 3037

Telephone: 303-315-7160

Website: engineering.ucdenver.edu/civil (<http://engineering.ucdenver.edu/civil/>)

Overview

Mission Statement

The mission of the Department of Civil Engineering:

- deliver high-quality comprehensive degree programs (BS, MS, MEng, PhD, EAS PhD) to all of our students at both the undergraduate and graduate levels
- matriculate students who excel in professional practice and leadership and who possess compassion and respect for people of all cultural backgrounds
- teach our classes with excellence, whether in a traditional classroom setting or online
- offer our students state-of-the-art laboratories, equipment and classrooms with the latest technology needed for a complete learning experience
- develop ambitious and innovative research programs involving both faculty and students through funding from federal, state and local sources
- provide supportive mentoring and guidance to our students through teaching, research and advising
- produce students who can work as leading professionals in civil engineering and in many other fields for which civil engineering knowledge can be a foundation

Civil Engineering Graduate Admissions Information

Requirements for Admission

Applicants to the master of science in civil engineering (p. 197) (MS) program must satisfy all requirements specified in the Information for Graduate Students (p. 38) chapter of this catalog. Most applicants have an ABET accredited undergraduate degree in civil engineering.

An undergraduate GPA of 3.0 (on a 4-point scale) or better is required for regular admission. Applicants must submit evidence of adequate preparation for graduate study by documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body.

Applicants whose undergraduate degree is in a field other than civil engineering may also be admitted into the MS in civil engineering degree program, if they have or will complete undergraduate prerequisite courses as required by the Department of Civil Engineering and the student's graduate advisor.

Applicants to the master of engineering (p. 197) (MEng) program must have a baccalaureate degree in engineering, math, science, economics or planning from an accredited college or university and satisfy all requirements specified by the Graduate School.

Prospective PhD students should contact the Department of Civil Engineering to inquire about application requirements and to obtain the "Rules and Policies for the Coordinated PhD Program," a coordinated program with the University of Colorado Boulder.

In addition to the coordinated Civil Engineering PhD, the multidisciplinary engineering and applied science PhD (p. 223) is available through the Department of Civil Engineering.

Requests for applications for graduate study in civil engineering should be addressed to

CU Denver Department of Civil Engineering

Campus Box 113
P.O. Box 173364
Denver, CO 80217-3364

Applicants who are not citizens or permanent residents of the United States should apply through the

Office of International Admissions

Campus Box 185
P.O. Box 173364
Denver, CO 80217-3364

All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

Programs

- Civil Engineering, MS and MEng (p. 197)
- Civil Engineering, PhD (p. 198)
- Construction Project Management Graduate Certificate (p. 199)
- Engineering and Applied Science, PhD (p. 199)
- Geographic Information Systems and Geomatics Graduate Certificate (p. 200)
- Integrated Construction, Management + Leadership Graduate Certificate (p. 200)

Faculty

Professors:

Yail Jimmy Kim, PhD, Queen's University, PE-Canada
Wesley Marshall, PhD, University of Connecticut, PE-Connecticut
David C. Mays, PhD, University of California at Berkeley, PE-Colorado, California

Kevin L. Rens, PhD, Iowa State University, PE-Colorado

Associate Professors:

Caroline Clevenger, PhD, Stanford University, PE, RA-Colorado
Arunprakash Karunanithi, PhD, University of Connecticut
Chengyu Li, PhD, Arizona State University; PE-Colorado, North Carolina, New Mexico, Washington; SE-Utah, Arizona, Washington

Assistant Professors:

Moatassem Abdallah, PhD, University of Illinois at Urbana-Champaign
Heidi Brothers, PhD, University of Cincinnati
Allison Goodwell, PhD, University of Illinois at Urbana-Champaign
Frederick R. Rutz, PhD, University of Colorado, PE-Colorado

Professors Emeriti:

Paul E. Bartlett, MS, University of Colorado, PE-Colorado
Nien-Yin Chang, PhD, Ohio State University, PE-Ohio and Colorado
James C.Y. Guo, PhD, University of Illinois at Urbana-Champaign, PE-Colorado
David W. Hubly, PhD, Iowa State University, PE-Colorado
Bruce N. Janson, PhD, University of Illinois at Urbana-Champaign
Lynn E. Johnson, PhD, Cornell University, PE-Connecticut
Oren G. Strom, PhD, University of Texas at Austin

Civil Engineering (CVEN)

CVEN 5025 - Autocad Civil 3d & Advanced Civil Engineering Graphics (3 Credits)

Lectures target civil engineering industry specific site information modeling software and geospatial industry specific geographical information systems software to elevate students' knowledge of each software to an in-depth understanding. Laboratory exercises will focus on civil drafting and design, producing documentation, and general project workflows. Additional laboratory exercises will focus on geospatial data creation, data management, and cartographic display. Prereq: CVEN 1025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 1025

CVEN 5087 - Engineering Contracts (3 Credits)

Laws met by the practicing engineer, types of contracts, specification writing, laws on contracts, agency, partnership, sales and property, with primary emphasis on rights and duties of the engineer. Cross-listed with CVEN 4087. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5110 - Advanced Structural Classical Analysis (3 Credits)

Understanding classical hand-solved analysis techniques in civil and structural engineering. Methods to be studied include: Moment Area, Conjugate Beam, Virtual Work, Stiffness Method, Force Method, Slope Deflection, and Moment Distribution. Prerequisite: CVEN 3505 with B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: CVEN 3505 with B- or better or graduate standing.

CVEN 5111 - Structural Dynamics (3 Credits)

Vibration and dynamic response of simple linear and nonlinear structures to periodic and general disturbing forces. Frequency domain analysis, response analysis of multi-degree-of-freedom systems. Wind and earthquake effects. Prereq: CVEN 3505 with a B- or higher or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a B- or higher or graduate standing.

CVEN 5112 - Structural Design Loads (3 Credits)

The course will review the probabilistic approach for load determination used in modern building codes from theoretical and applied perspectives. The course is intended to study design dead loads, live loads, snow loads, earthquake loads, wind loads, construction loads, and load combinations for buildings. There will be off-campus events at times other than regular class hours. Other topics may be treated as time permits. Prereq: CVEN 3505 with a C- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a C- or higher

CVEN 5121 - Intermediate Mechanics of Materials (3 Credits)

Intermediate-level course in the mechanics of deformable bodies. Plane stress and strain; stress-strain relation with emphasis on elastic and inelastic behavior of members, and theories of failure. Discussion of basic methods of structural mechanics, with applications to asymmetric and curved beams, thick walled pressure vessels, torsion of members of noncircular section, and other selected problems in stress analysis. Prereq: CVEN 3121 or MECH 3043 and MATH 3191 and 3200 or MATH 3195 with a C- or higher, or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

(CVEN 3121 or MECH 3043) AND ((MATH 3191 and MATH 3200) or MATH 3195) OR GRAD/NDGR

CVEN 5201 - Construction Dewatering (3 Credits)

Introduction to construction dewatering including removal of ground water and surface water in construction sites, characteristics of groundwater aquifers, groundwater flow, geotechnical investigation of dewatering problems and application of modern dewatering technology. Basic methods for controlling water on a construction project are presented incorporating open flow and pumping of excavations, soil pre-draining, water cutoff and exclusion. Prereq: Theoretical/applied fluid mechanics, Soil mechanics. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5333 - Surface Water Hydrology (3 Credits)

Fundamentals of hydrology emphasizing surface water processes. Topics include the hydrologic cycle, frequency analysis, drought management, flood routing, rainfall-runoff relationships (rational method, unit hydrograph, and hydrologic software) and hydrologic design. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5334 - Groundwater Hydrology (3 Credits)

Topics include groundwater occurrence, hydrologic cycle and budget, interactions with surface waters, principles of groundwater flow, well hydraulics, well field design, regional flow systems, water and pollutant chemistry, computer modeling and groundwater management. Emphasis is on quantitative analysis methods for groundwater resource inventory, design and management. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5335 - Vadose Zone Hydrology (3 Credits)

Engineering analysis of the vadose zone, the unsaturated porous media linking the earth surface to groundwater. Darcy's law for flow. Richards equation for moisture content. The advection-dispersion equation for solutes. Analytical solutions and numerical modeling applied to infiltration, evaporation, drainage, and subsurface remediation. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5336 - Urban Runoff Quality and Quantity Modeling (3 Credits)

This course covers rainfall/runoff data base, rain gage under-catch, statistical models for frequency analysis, Unit Graph and Kinematic Wave method for runoff prediction, urban watershed modeling, event-based flood prediction, continuous flow predictions, modeling consistency and sensitivity, impact assessments, master drainage planning, and storm centering technique. Prereq: CVEN 3323 with a C- or higher and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323 with a C- or higher and graduate standing

CVEN 5337 - Sustainable Hydraulic System Design (3 Credits)

This course applies the low-impact-development (LID) principles to design stormwater hydraulic structures in urban areas. The major topics in this course will cover storm water quality capture volume, filtering process for water quality control, and infiltration process for on-site stormwater disposal, including porous pavements, vegetation beds, bio swales, rain gardens, and landscaping detention. The computer model, EPA SWMM-LID, will be employed to guide the selection of design parameters and to evaluate the structural performance. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5343 - Open Channel Hydraulics (3 Credits)

Engineering analysis and design of natural and artificial open channels. Application of uniform flow concept to design of erodible and non-erodible channels. Application of energy and momentum principles to conditions of gradually varied flow, spatially varied flow and rapidly varied flow. Prereq: CVEN 3323 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323

CVEN 5344 - Unsteady Open Channel Hydraulics (3 Credits)

Derivation of basic principles of unsteady open channel flow. Application of kinematic wave, diffusive wave and dynamic wave approaches to open channel, including overland flow and flow in a drainage or river network. Introduction of numerical finite difference methods, characteristic method and simplified analytical method for the solution of unsteady open channel flow problems. Evaluation of computer simulation models such as DWOPER and SWMM. Prereq: CVEN 5343 and CVEN 5333 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5333 and CVEN 5343

CVEN 5345 - Computational Methods for Water Resources (3 Credits)

This course covers two major areas: hydrologic and hydraulic numerical routing schemes. The hydrologic routing includes linear and nonlinear reservoir operations using the characteristic curves derived from the reservoir geometry. The hydrologic routing numerical scheme will be applied to optimize the reservoir operations for power generation, irrigation, and flood control. The hydraulic routing covers Dynamic Flood Wave, Diffusive Wave, and Kinematic Wave. The finite difference method is used to develop numerical models to predict flood flows through channels. This course also covers probable maximum precipitation and dam break flow analysis. Prereq: CVEN 3323. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323

CVEN 5381 - Introduction to Geographic Information Systems (3 Credits)

Provides an overview exposure and experience with various aspects of GIS technology and its uses for natural resource and infrastructure, planning, design and management. This course involves a survey of GIS software and hardware, review of cartographic mapping principles, hands-on applications to environmental impact assessment, municipal facilities management, transportation, water resources and demographics. GIS project management factors are addressed. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5382 - Geospatial Data Development (3 Credits)

This second GIS course builds on the introductory course and addresses principles and technologies for development and conversion of spatial databases, including photogrammetry, surveying and geodesy, coordinate systems and transformations, and remote sensing. Prereq: CVEN 5381 with a B- or better OR graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 with a B- or better OR graduate standing.

CVEN 5383 - GIS Analysis – Theory and Practice (3 Credits)

This third course reviews GIS software functions and terminology, including data entry (input, editing), manipulation (projection, merge, window, aggregate), analysis (map algebra, overlay, Boolean, interpolation network, measurements, distance, terrain modeling, statistical analysis), query (spatial, attribute), and display/reporting. Integration of various domain-specific systems analysis models with GIS databases is also addressed. Laboratory activities involve programming applications using available GIS. Prereq: CVEN 5381. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5384 - GIS Project Management (3 Credits)

This course explains how to build a foundation for GIS project success and deliver results. Topics include data governance, administration of technical infrastructure, managing roles and skills, key leadership concepts, and project management methodologies like Agile/Scrum. Best practices and real world applications are discussed. Also addressed are issues of GIS institutional acceptance, the role of computerized spatial data systems in decision-making, application of planning techniques for accomplishing resource goals, and administrative structures that enhance efficiency of use. Prereq: CVEN 5381 with a B- or better or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 with a B- or better OR graduate standing.

CVEN 5385 - GIS Relational Database Systems (3 Credits)

Introduces relational database management system concepts with emphasis on GIS. Includes examination of relational database systems from conceptual design through relational schema design and physical implementation. Topics include SQL, database design and implementation for large database systems, transaction management, concurrency control, distributed database management systems and the interaction and progressive integration of GIS technologies and RDBMS technologies. Prereq or Coreq: CVEN 5381 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq or Coreq: CVEN 5381 or graduate standing.

CVEN 5386 - GIS Laboratory (3 Credits)

Provides in-depth experience with use and programming of a particular GIS software, including ArcGIS and related object-oriented programming languages. Advanced functionality for user authoring of software interface, data management and analysis functions and output generation. Exact content will vary by semester. Prereq: CVEN 5381.

Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Prereq: CVEN 5381

CVEN 5387 - Advanced Remote Sensing (3 Credits)

Addresses remote sensing concepts including 1) imaging sensors and geo-referencing; 2) image processing for radiometric, multi-spectral image enhancement, and multi-sensor image fusion; and 3) multi-spectral image classification, including feature extraction, supervised and unsupervised classification, and extensions to hyper-spectral data. Prereq: CVEN 5382 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5382 with a B- or better OR graduate standing.

CVEN 5388 - Site Engineering (3 Credits)

Course introduces the fundamentals of site engineering which require understanding and interpreting landforms, slopes, contour lines, grading, drainage, and earthwork to storm water management, hydrology reports, designing roadways, and street networks. Other topics include designing for ADA and concepts of sustainability in site design. Note: CAD experience is recommended. Cross-listed with CVEN 4388. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 1025

CVEN 5389 - Open Source Desktop Mapping, Modeling & Data Processing (3 Credits)

This graduate-level course covers the open source tools and procedures that students can use for desktop GIS mapping, modelling, and data analysis and preparation that are unique in comparison to other GIS software used in the industry. Prereq: CVEN 5381 Intro to GIS or equivalent permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5390 - Interactive Web Mapping GIS (3 Credits)

This course introduces students to designing, creating, delivering, and using interactive web maps. Many people rely daily on web maps to direct us from point A to point B and more. After starting with a broad introductory background, this is a technical hands-on course in which students use several open source (FOSS) technologies. Prereq: CVEN 5381 Introduction to GIS or equivalent or permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5391 - Introduction to Geomatics (3 Credits)

This course presents the concepts of Geomatics along with spatial data, tools, and their connection. This course covers spatial data collection methods, data assessment, and processing. The course also covers projections, methods of coordinate conversion and transformation, and data transfer across different spatial analysis platforms. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5392 - Unmanned Aerial Systems (3 Credits)

This course presents concepts and practical methods of using Unmanned Aerial Vehicles for engineering projects. The course covers mission planning, operations, field data collection and processing, and data analysis. Legal and ethical considerations are also covered, as well as the relative costs and benefits of using UAV. Prereq: CVEN 5391. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391

CVEN 5393 - Water Resources Development and Management (3 Credits)

A multidisciplinary exploration of the principles governing water resources planning and development. Emphasis is on the sciences of water (physical, engineering, chemical, biological and social) and their interrelationships. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5395 - GPS/GNSS (3 Credits)

This course presents the practical concepts and implications of using GPS/GNSS for engineering projects. The course covers a variety of techniques for field data collection, processing, and data analysis. The course emphasis is on changes that are occurring because of using GPS/GNSS in the field. Prereq: CVEN 5391. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391

CVEN 5396 - HDS/LiDAR Tools & Data Analyses (3 Credits)

High Definition Surveying (HDS) scanners are extremely reliable and accurate geospatial data collection devices for surveyors, GIS analysts, engineers, and planners. The goal of this unique course is to present the instrumentation and technological principals used in data collection, project phases, data processing and analyses. This course is designed to provide information and practical skills for students wanting to learn how to plan and execute terrestrial LIDAR data collection projects with HDS scanners and HDS data processing software. Prereq: CVEN 5381 and CVEN 5395 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 and CVEN 5395

CVEN 5397 - Unmanned Aerial Systems Data processing (3 Credits)

This course will provide information and practical skills for unmanned aerial systems data processing and analyses. The course focuses on sensor selection, ground control, data processing, and data analyses. Prereq: CVEN 5391 and CVEN 5392. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391 and CVEN 5392

CVEN 5401 - Introduction to Environmental Engineering (3 Credits)

Introduces students to the broad field of environmental engineering. Topics include essential chemical, biological, and risk assessment concepts needed for addressing environmental problems. Major unit operations and processes used for treating wastewater and potable drinking water. An overview of technologies used for treating particulate and gaseous air pollutants, managing solid wastes, and remediating hazardous wastes. The course also introduces environmental sustainability, green engineering, life cycle assessment and other systems oriented concepts. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Prereq: CHEM 1130, CHEM 2031, or ENGR 1130, and Graduate standing or permission of instructor. Cross-listed with CVEN 3401. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5402 - Contaminant Fate and Transport (3 Credits)

Provides unified understanding of fundamental physical, chemical and biological processes that govern the transport and fate of pollutants in environmental systems - water, air and subsurface. The course focuses on multimedia modeling and model solution methods. The course also introduces exposure and risk assessment techniques.

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5403 - Environmental Regulations and Management Systems (3 Credits)

Students will receive an overview and understanding of major environmental laws and will be introduced to legal concepts used to develop environmental laws. In addition, students will learn about environmental management systems and their applications to environmental problems. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5404 - Water and Wastewater Treatment (3 Credits)

Water and wastewater treatment, including aqueous chemistry (equilibrium, reaction kinetics, redox reactions, and acid-base equilibria), physicochemical processes (sedimentation, filtration, adsorption, membrane separation), and biological processes (applied microbiology, reactor configuration, waste-to-energy technology). Prereq: CHEM 1130, CHEM 2031, ENGR 1130, graduate standing or instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5405 - Environmental Life Cycle Assessment (3 Credits)

This course covers cradle-to-grave systems thinking and focuses on quantitative methods for environmental systems modeling, analysis and assessment. The primary method covered is life cycle assessment (LCA). The students will learn the various steps for conducting a process-based LCA including goal and scope definition, life cycle inventory (LCI), life cycle impact assessment (LCIA) and interpretation. For a broader life cycle perspective Economic Input-Output LCA (EIO-LCA) will be introduced. Emphasis will also be placed on framing the LCA analysis around attributional (technology/process) versus consequential (policy/decision) focus. Mathematical techniques for uncertainty & sensitivity analysis, such as Monte Carlo simulations will be covered. Students will be exposed to several LCA case studies. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

CVEN 5406 - Engineering and Science Informatics (3 Credits)

Students will learn applied, basic statistics & probability concepts and provide experience in the correct use and interpretation of those techniques. The course is designed in such a way that any graduate or undergraduate level student wanting to learn data analysis will benefit. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CVEN 5407 - Complex Systems Methods (3 Credits)

This graduate course introduces nonlinear dynamics, information theory, and network analysis in an environmental engineering, earth sciences, and sustainability context. Techniques will be applied to analyze environmental and weather data in addition to other examples relevant to engineering and critical zone science. Restriction: Restricted to graduate standing or with instructor's permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

CVEN 5424 - Field Methods for Sustainable Development: Colombia (3 Credits)

Course will introduce students to international sustainable development in both lab and field work in Colombia, partnering with communities on sustainable development projects across cultures and disciplines both within and outside of engineering, and emphasizing community interaction. Travel fees are required. Note: Personal essay, letter of recommendation, and interview with instructor required. Cross-listed with CVEN 4424. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5426 - Pipe Network and Sewer Design (3 Credits)

Design of pressurized pipe networks for water supply and sanitary sewers for wastewater collection. Topics include the civil engineering design process, estimation of water and wastewater design loads, and design of pressurized pipe networks and sanitary sewers including pump selection, service reservoirs, lift stations, and relevant software. Design project and field trip required. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Cross-listed with CVEN 4426. Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor's permission.

CVEN 5427 - Storm Water System Design (3 Credits)

This course covers urban watershed analysis, design rainfall and hydrologic losses, flood frequency and design event, rational method for peak runoff prediction, street hydraulic capacity and safety, culvert hydraulics, street inlet collection system, and storm sewer system design and flow analysis. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Prereq: CVEN 3323 with a C- or higher. Restriction: Restricted to students with graduate standing or with instructor's permission. Cross-listed with CVEN 4427. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor's permission.

CVEN 5434 - Sustainable Water Systems: Biological Processes (3 Credits)

A comprehensive course that covers the theory and application of biological processes used in water quality engineering, with an emphasis on state-of-the-art water pollution control and waste-to-energy technologies. The initial lectures will introduce material on microbial energetics, diversity, and kinetics. The remainder of the course will involve the application of fundamental principles to treatment and energy recovery processes, including bioreactor configurations and design considerations. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5460 - Introduction to Sustainable Urban Infrastructure (3 Credits)

This course takes a systems approach to urban infrastructures that deliver critical materials to cities; primarily water, energy, transportation, buildings, and food systems. The focus is on the current state of sustainable development, cities, and infrastructure systems, exploring sustainability strategies and measuring their effectiveness, and analyzing implementation and diffusion of sustainability strategies. Cross-listed with URPL 6399. Prereq: Graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CVEN 5461 - Defining and Measuring Sustainability (3 Credits)

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Field work applies both tools to cities in Colorado. Cross-listed with URPL 6548. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5464 - Sustainability and Climate Change (3 Credits)

This course explores environmental sustainability in the context of climate change, emphasizing feedbacks and interactions within the climate-ecosystem-water-energy-food system. Course topics include climate and ecosystem modeling, climate data analysis, and testing students' assumptions and inferences regarding various sustainability topics. Prereq: Graduate standing or instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CVEN 5480 - Hazardous Wastes and Site Remediation (3 Credits)

Students learn to: (1) define and classify hazardous wastes encountered at hazardous waste-contaminated sites, (2) learn basic principles underlying currently available technologies for site remediation, (3) use EPA's technology screening matrix for technology selection, and (4) provide engineering design for selected remediation systems, e.g. ground-water-pump-and-treat, soil vapor extraction, soil washing, and bioremediation. Prereq: CVEN 5402. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5402

CVEN 5481 - Sustainable Water Systems Policy and Planning (3 Credits)

To provide students with a working knowledge of sustainable urban water systems which are resilient, resource efficient and environment friendly. Students will learn about the various components of urban water and wastewater systems, including water resource management, treatment, transport and reuse, and how to evaluate, develop and design the various components in a sustainable manner. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5494 - Risk Assessment in Environmental Engineering (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Prereq: Graduate standing or permission of instructor. Cross-listed with ENVS 6200, HBSC 7340. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5514 - Matrix Analysis of Structures (3 Credits)

Matrix analysis of skeletal structures. Systematic formulation of stiffness and flexibility methods of analysis of skeletal structures. Application of modern computational tools to structural analysis, including introduction to the finite element method. Prereq: CVEN 3505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a C- or higher

CVEN 5515 - Introduction to Finite Element Analysis (3 Credits)

Systematic formulation and application of the finite element approximation to the solution of engineering problems. Topics include one- and two-dimensional elasticity problems, two-dimensional heat flow and irrotational fluid flow. Elements considered include triangular and quadrilateral elements formulated by elementary and isoparametric techniques. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5540 - Masonry Design (3 Credits)

The course will review the probabilistic approach for load determination used in modern building codes from theoretical and applied perspectives. The course is intended to study design dead loads, live loads, snow loads, earthquake loads, wind loads, construction loads, and load combinations for buildings. There will be off-campus events at times other than regular class hours. Other topics may be treated as time permits. Prereq or Coreq: CVEN 4585 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq/Coreq: CVEN 4585 or graduate standing.

CVEN 5550 - Highway Bridge Design (3 Credits)

Design of highway bridges in accordance with the ASSHTO LRFD Bridge Design Specification. Topic coverage includes bridge planning, construction materials in bridges, bridge systems, design loads, structural modeling and analysis, design of concrete deck system, and design of concrete and steel superstructures. Prereq: CVEN 4575 and CVEN 4585 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4575 and CVEN 4585 with a C- or better or graduate standing.

CVEN 5565 - Advanced Timber Structure Design (3 Credits)

Design of wood framing systems including beams, columns, trusses, and diaphragms. Wood as a material, framing terminology, connection design, structural composite lumber, glued-laminated members, and plywood are covered. The course will emphasize on preparing students for a career in structural engineering. Prereq: Graduate Standing or (CVEN 3505 and 3141 with a C- or higher and Civil Engineering major). Cross-listed with CVEN 4565. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: Graduate Standing or (CVEN 3505 and 3141 with a C- or higher and Civil Engineering Majors.)

CVEN 5575 - Advanced Topics in Structural Steel Design (3 Credits)

Plate buckling, plate girder design and other topics determined by class interest. Prereq: CVEN 4575 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4575 with a C- or better or graduate standing.

CVEN 5580 - Design of prestressed concrete structures (3 Credits)

To learn the basic concepts of analysis and design of prestressed concrete, which is essentially reinforced concrete in which steel reinforcement is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Prereq: CVEN 4585. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585

CVEN 5585 - Advanced Topics in Reinforced Concrete (3 Credits)

Advanced topics relating to design and analysis of reinforced concrete structures. Prereq: CVEN 4585. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585

CVEN 5590 - Design of Prestressed Concrete (3 Credits)

To learn the basic concepts of analysis and design of prestressed concrete, which is reinforced concrete in which steel is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Cross-listed with CVEN 4590. Prereq: CVEN 4585 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585 with a C- or better or graduate standing.

CVEN 5591 - Design of Composite Structures (3 Credits)

The objective of this course is to provide engineering students with an overall awareness of the application and design of composite structures. Practical examples are discussed based on theory. Prereq: CVEN 4585 with a C- or better or graduate standing. Cross-listed with CVEN 4591. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585 with a C- or better or graduate standing.

CVEN 5602 - Advanced Street & Highway Design (3 Credits)

This course delves into the art and science of designing sustainable and context sensitive street and highway facilities. Topics include road classification, transportation planning, road alignments, cross-section design, bicycle and pedestrian facilities, intersections, and street network design. Cross-listed with CVEN 4602. Prereq: Permission of Instructor. Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5611 - Transportation Engineering Statistics (3 Credits)

Covers statistical analysis methods for engineering studies in general, and for highway accident and traffic flow data in particular. Topics include data needs, sampling designs, survey methods, hypothesis testing, tests of proportions, non-parametric tests, analysis of variance, multivariate regression, and other tests of fit. Introductory overview of state and federal accident databases. Comparisons of accident rates by highway type, vehicle speeds, vehicle types, weather conditions and other factors also presented. Restriction: Graduate standing majors in the College of Engineering, Design and Computing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5612 - Traffic Impact Assessment (3 Credits)

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5613 - Traffic Simulation Modeling (3 Credits)

This graduate-level course introduces students to the principles, methods, and software needed to perform traffic simulations of alternative transportation modes in urban areas. Students will develop a case study simulation of their choosing. Pre-req: CVEN 5621 Highway Capacity Analysis or equivalent permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5621

CVEN 5621 - Highway Capacity Analysis (3 Credits)

Covers the principles and applications of highway capacity analysis for freeways and arterials, ramps and interchanges, weave and merge sections, signalized and unsignalized intersections, roundabouts, pedestrian areas and transit. Emphasis is on level-of-service analysis procedures in the Highway Capacity Manual, although other approaches are also discussed. Additional topics include roadway characteristics, vehicle dynamics, human factors, speed and volume studies, travel time surveys and traffic flow characteristics. Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5622 - Traffic Operations and Control (3 Credits)

Covers principles of traffic flow and analysis methods for surface street traffic systems. Emphasis is on network modeling and simulation of coordinated signal systems, together with unsignalized intersections and freeway junctions using modern software tools. Additional topics include alternative signal timing plans, signal controllers, vehicle detection systems for volume, speed, occupancy and ramp metering. A course project requires students to develop and apply modeling software to a case study area. Prereq: CVEN 5621 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5621 with a B- or better or graduate standing.

CVEN 5631 - Transport Modeling & Big Data (3 Credits)

This graduate-level course introduces students to travel demand modeling as developed over the last 60 years. It covers the fundamentals of conventional models and data needs but also delves into newer "big" data sources and methods that will allow us to observe and analyze transportation in completely new ways. Restriction: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5632 - Urban Transportation Modeling (3 Credits)

An advanced coverage of urban and regional transportation planning models, procedures and software. Mathematical formulations, properties, and solution algorithms are presented. Additional topics include methods of data acquisition from public domain databases for use in modeling software. A course project requires students to develop an application of modeling software to a case study area. Prereq: CVEN 5631 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5631

CVEN 5633 - Sustainable Transportation Systems (3 Credits)

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Restriction: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5641 - Transit System Design (3 Credits)

This course introduces students to the components of transit system planning and design including station design and accessibility. The course focuses primarily on light rail design, but provides an overview of different transit modes. The instructors of this course have hands-on experience in transit planning, design, and construction. Prereq: graduate standing or permission of instructor.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

CVEN 5642 - Transit Construction (3 Credits)

This course introduces students to the fundamentals of transit construction necessary for successful project completion. It also covers how many different types of transit projects are managed and sustained. The instructors of this course have hands-on experience in transit construction, scheduling, and project control. Prereq: graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

CVEN 5652 - Airport Planning and Design (3 Credits)

National airport system plan, air travel demand, geometric design of airport facilities, design of airport pavement and drainage structures, and airport environmental impact. Prereq: CVEN 3602 and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 and Graduate Standing

CVEN 5662 - Transportation System Safety (3 Credits)

This is a graduate-level course on road safety that will: investigate contemporary safety analysis techniques; highlight the disconnect between the current safety paradigm and actual safety outcomes; cover drive, bicyclist and pedestrian safety concerns; and discuss notable efforts such as Vision Zero. Restriction: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5682 - Pavement Design (3 Credits)

This course addresses both the structural analysis and design methods for pavements. Emphasis will be on mechanistic analysis. It covers very broad areas of properties of pavement materials such as concrete and hot-mix asphalt, base course, and subgrade; traffic loads, the design and performance of flexible pavements and rigid pavements; and drainage. Computer codes included in the textbook package will be used in the course, mainly because of its availability without additional cost. Other topics may be treated as time permits. Prereq: CVEN 3141, 3505, and 3708/3718 with a C- or higher, OR graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3141, CVEN 3505, and CVEN 3718 with a C- or higher OR Graduate standing.

CVEN 5708 - Advanced Soils Engineering (3 Credits)

A unified treatment of the foundation of soil engineering analysis. Topics include stress-strain-strength of soils; generalized limiting equilibrium analysis; stability analyses of earth-retaining structures, slopes, and shallow foundations; probabilistic approach of stability assessment; computation of settlement of foundations in sand and clay and time-rate of consolidation and critical state concept. Special attention is directed toward the illustration of theory through practical examples. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5709 - Settlement Analysis (3 Credits)

A unified treatment of settlement analysis on sand and clay. Topics include settlement of shallow foundation, settlement of deep foundation, and settlement of embankments, walls and excavations. Conventional methods of analysis and the finite element method of analysis are covered. Critical design implications are emphasized. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5718 - Engineering Properties of Soils (3 Credits)

Engineering properties of soils, including index properties, permeability, stress-strain behaviors, shear strength, compressibility, critical state soil models and their application in interpreting soil behaviors. Attention also is directed to laboratory and in situ tests to examine the validity of shear strength and compressibility theories and their application to stability and settlement analysis. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5719 - Design and Construction of Geosynthetic-Reinforced Soil Structures (3 Credits)

Theory of reinforced soil; mechanical and hydraulic properties of geosynthetics; soil-geosynthetic interaction behavior; design concepts of GRS structures; design and construction of GRS retaining walls; design and construction of GRS embankments and slopes; design and construction of GRS foundations. Prereq: CVEN 5708. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5708

CVEN 5738 - Foundation Engineering (3 Credits)

Methods of subsurface exploration and sampling of soils, lateral support in open cuts, control of groundwater, analysis and design of shallow foundations, analysis and design of deep foundations, bridge abutments and cofferdams, underpinning, and application of modern computational techniques to analysis and design of foundations. Cross-listed with CVEN 4738. Prereq: CVEN 3141 and 3718 with a C- or higher. Restriction: Restricted to Civil or Construction Engineering majors or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3141 and 3718 with a C- or higher. Restriction: Restricted to Civil or Construction Engineering majors. OR Graduate standing.

CVEN 5758 - Foundations on Expansive Soils (3 Credits)

Expansive soils swell upon wetting because of the swelling nature of constituent clay minerals, particularly montmorillonite. This course studies swelling nature of different clay minerals, effects of wetting, swelling potential, swelling pressures, and design of different foundation systems. Prereq: CVEN 4738, B.S.C.E. or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5768 - Introduction to Rock Engineering (3 Credits)

Nature of rock masses, geological exploration, deformability and strength, in situ stresses and deformation, rock hydraulics. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5780 - Engineering Geology (3 Credits)

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with CVEN 4780 and GEOL 4780/5780. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 2121 and MATH 2411

CVEN 5798 - Dynamics of Soils and Foundations (3 Credits)

Principles of vibrations of, and wave propagation in, elastic, homogeneous, isotropic media; laboratory and in situ measurements of soil properties; applications of these principles and properties to the design of foundations subject to dynamic loading generated by machinery, earthquakes, or blasts. Prereq: CVEN 5708, 5718, and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5708, 5718, and Graduate Standing

CVEN 5800 - Special Topics (3 Credits)

Topical courses offered once or on irregular intervals. Typical topics include: computer-aided structural engineering, pre-stressed concrete, non-matrix structural analysis, geotechnical aspects of hazardous waste management, geographic information systems and facility management, groundwater hydrology, engineering project management, structural planning, engineering practice, spreadsheet application, field instrumentation, hazardous wastes engineering, bridge super and substructure design, advanced steel design, hydraulic transients, foundations – expansive soils, sludge process design. Prereq: Variable.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CVEN 5840 - Independent Study (1-6 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 5939 - Internship (1-3 Credits)

Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

CVEN 5960 - Master's Report (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

CVEN 6111 - Dynamics of Structures (3 Credits)

Linear and nonlinear dynamic matrix analysis of multi-degree-of-freedom structural systems. Analysis and design for wind and earthquake loads including modal analysis and sub structuring techniques. Computer programming. Prereq: CVEN 5111. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5111

CVEN 6131 - Theory of Elasticity (3 Credits)

Mathematical theory of elasticity and its applications to engineering problems. Discussion of the basic analytical and numerical methods of solutions. Prereq: CVEN 5121. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5121

CVEN 6165 - Buckling in Structures (3 Credits)

Buckling of columns, beams, frames, plates, and shells in the elastic and plastic range. Post-buckling strength of plates. Beam-columns. Analysis by exact and approximate methods with special emphasis on practical implications and application of solutions. Prereq: CVEN 3121. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3121

CVEN 6336 - Urban Flood Control System Design (3 Credits)

This course covers urbanization impact on watershed regime, flood control measures, detention and retention system, infiltration basin, sand filter, water quality control basin, wetland preservation, storm water Best Management Practices, low impact development, outlet structure design, pond safety, stream restoration, overflow risk analysis and optimal operation. Prereq: CVEN 5333, 5343 and graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5333, 5343, and Graduate Standing

CVEN 6738 - Finite Element Method in Geotechnical Engineering (3 Credits)

Topics covered include: review of finite element methods, advantages and limitation of FEM for analysis of geotechnical engineering problems, one- and two-dimensional seepage analysis, consolidation analysis, incremental and iterative procedures in nonlinear analysis, no-tension analysis, simulation of construction sequence, simulation of soil behavior, simulation of interface behavior, and load-displacement analysis of earth structures. Prereq: CVEN 5708 and 5515 or consent of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 6840 - Independent Study (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7800 - Special Topics (1-6 Credits)

Credit and subject matter to be arranged. Prereq: Variable. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7840 - Independent Study (1-3 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7990 - Doctoral Dissertation (1-10 Credits)

Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

CVEN 8990 - Doctoral Dissertation (1-15 Credits)

Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Additional Information: Report as Full Time.

Construction Engineering and Management (CEMT)

CEMT 5231 - Construction Materials and Methods (3 Credits)

This course serves as an introduction to the primary materials and methods used to construct buildings and infrastructure across the United States, including concrete, wood and steel. Students explore processes related to specifying and installing materials, as well as analyze various material performance characteristics. Students are required to complete lectures, videos and class activities. Students also research and present information on a wide range of materials and construction processes. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

CEMT 5232 - Construction Planning and Control (3 Credits)

This course presents knowledge on planning and controlling of construction projects. Students will learn the basics of construction planning to develop work breakdown structure and activity list, estimate activity cost and duration, and identify job logic and precedence relationships. Several scheduling techniques will be presented in this class, including bar chart, network scheduling, uncertainty in scheduling (PERT), limited resources scheduling, resource leveling, line of balance, and time-cost tradeoff analysis. Furthermore, this class will provide knowledge on cash flow analysis and construction control techniques such as Earned Value method. Students will acquire skills on the use of currently available computer scheduling and planning software such as Primavera 6 and Navisworks Manage to create 5D models to visualize sequence of the construction activities. In addition, students will form teams and work on a project throughout the semester to apply the skills that they learn in class. Cross-listed with CVEN 4232. Prereq: CEMT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010) or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010) or graduate standing.

CEMT 5233 - Construction Cost Estimating (3 Credits)

This course presents the application of scientific principles to rough and detailed cost estimating for construction. The course starts with an introduction to estimating and how it fits in bid/proposal process and construction management. Quantity take offs, putting costs to those quantities, overhead costs, cost markups and profits; and computerized estimating will be explored. The project includes quantity take and cost estimate for the concrete and metals portion of an actual project. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or Graduate standing.

CEMT 5234 - Sustainable Construction (3 Credits)

This course will serve as an introduction to major components and technologies used in sustainable design and construction to create healthy, environmentally-sensitive built environments. Content focuses on construction processes, renewable energy systems, healthy buildings, natural and cultural resources, and traditional as well as cutting-edge building techniques. Course participants will gain knowledge about effective sustainable practices through active learning by engaging in case studies, class presentations, and group activities. Numerous guest speakers will share first-hand experience regarding implementation and professional practice of sustainable principles in the real-world. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

CEMT 5235 - Advanced Construction Engineering (3 Credits)

This course starts with a high-level overview of Construction Engineering Management including organizations involved, current approaches and industry challenges. The course delves into contracts, estimating and managing earthwork, temporary construction, scheduling, quality and others. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 4235. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

CEMT 5236 - Project Management Systems (3 Credits)

Address the basic nature of managing projects and the advantages and disadvantages to this approach. Introduce the characteristics, techniques, and problems associated with initiating, planning, executing, controlling, and closeout of projects. Learn about the International Standards of PM and how to use them. Develop a management perspective about projects to help develop future project managers. Max hours: 3 Credits.

Grading Basis: Letter Grade

CEMT 5237 - Advanced Project Management (3 Credits)

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 6237. Max hours: 3 Credits.

Grading Basis: Letter Grade

CEMT 5238 - Integrated Construction Leadership (3 Credits)

This interdisciplinary course focuses on leadership. It is structured to feature top level executives in architecture, engineering and construction (AEC) industries to discuss current industry practice. It provides students opportunities to apply management and leadership principles in construction related projects and activities. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 6238. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

CEMT 5239 - Introduction to Temporary Structures and Construction Engineering (3 Credits)

This course will introduce the many types of temporary structures that are integral in the completion of construction projects. The temporary structures to be discussed include but are not limited to formwork, falsework, scaffolding, Support of Excavation (SOE), and equipment bridges. Construction Engineering will also be introduced including the application of structural engineering to crane picks and demolitions. The course includes planning, management and design aspects. The project includes the delivery of a formwork design that stresses the importance of constructability, cost, while providing updates throughout the project to the instructor. Cross-listed with CEMT 4239. Prereq: CEMT 2100 with a C- or better and junior or graduate standing. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 with a C- or better and junior or graduate standing.

CEMT 5240 - Building Information Modeling (BIM) (3 Credits)

Building Information Modeling is an advanced approach to facility design and construction using object-oriented 3-D models. It can be integrated in the design and construction for analytical purposes, including design, visualization, quantity takeoff, cost estimating, planning, and facility management. Prereq: CEMT 2100 or CVEN 4230. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230.

CEMT 5242 - Construction Safety (3 Credits)

This course is a study of safety practices in the construction industry and the specific safety procedures used in safety management of a construction project. Topics include safety risks inherent in construction projects, the roles of government, the judicial system, the insurance industry, designers and project owners in safety management and the economic impact of injuries. Advanced topics include safety risk quantification and analysis, design for safety and emerging technologies. Prereq: CEMT 2100 or CVEN 4230. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230.

CEMT 5246 - Construction, Business and Innovation (3 Credits)

AEC professionals rely on technical and soft (social) skills to solve complex challenges. The interdisciplinary nature of project delivery, to an increasing extent, requires professionals to collaborate across disciplines. This course explores innovation and collaboration at the interface of construction and business. Max hours: 3 Credits. Grading Basis: Letter Grade

CEMT 6235 - Advanced Construction Engineering (3 Credits)

This course starts with a high-level overview of Construction Engineering Management including organizations involved, current approaches and industry challenges. The course delves into contracts, estimating and managing earthwork, temporary construction, scheduling, quality and others. The course is delivered in an accelerated 8-week format. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

CEMT 6237 - Advanced Project Management (3 Credits)

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 5237. Max Hours: 3 Credits. Grading Basis: Letter Grade

CEMT 6238 - Integrated Construction Leadership (3 Credits)

This interdisciplinary course focuses on leadership. It is structured to feature top level executives in architecture, engineering and construction (AEC) industries to discuss current industry practice. It provides students opportunities to apply management and leadership principles in construction related projects and activities. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 5238. Prereq: CEMT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMT 2100 or CVEN 4230 or graduate standing.

Civil Engineering, MS and MEng

Introduction

Graduate School Policies and Procedures (p. 59) apply to these programs.

Graduate Degree Programs

The civil engineering graduate program is designed for both full-time and part-time students who want to advance their academic and professional skills in civil engineering and related areas. Many students are full time, while many also work full-time jobs and complete evening classes. Depending on a student's pace, the master's program takes 2-4 years to complete (on average). All graduate courses are offered in the afternoons or evenings. Some courses, including all GIS classes, are offered online.

Specialty Areas

Master of Science (MS)

- Construction Engineering and Management
- Geomatics and Geographic Information Systems (GIS)
- Geotechnical Engineering
- Hydrologic, Environmental, and Sustainability Engineering
- Structural Engineering
- Transportation Engineering

Master of Engineering (MEng)

- Construction Engineering and Management
- Geomatics Engineering and Geographic Information Systems (GIS)
- Hydrologic, Environmental, and Sustainability Engineering
- Transportation Systems

Requirements for Admission

GPA

Applicants must submit evidence of adequate preparation for graduate study by documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body.

Transfer Credit

Master's students may transfer up to 9 semester hours from another institution toward their master's degree, if approved by their advisor.

Program Prerequisites

Prerequisite classes are in addition to the 30 semester hours needed to complete a master's degree, as they are necessary background information that is usually included in an engineering bachelor's

program. Students must receive a grade of C minus (C-) or better for the prerequisite class to apply to the program.

Students may complete prerequisite classes either before or after being admitted to a degree program. However, applicants with too many prerequisites may not gain admission. You may complete no more than nine credit hours of graduate work before these prerequisite courses are completed. Note, all courses taken at CU Denver count toward your grade point average (GPA), however only graduate courses count toward your graduate degree GPA.

If prerequisites are taken while admitted to the master's program, students must maintain a 3.0 overall GPA, per Graduate School rules.

Requests for applications for graduate study in civil engineering should be addressed to

CU Denver Department of Civil Engineering
Campus Box 113
P.O. Box 173364
Denver, CO 80217-3364

Applicants who are not citizens or permanent residents of the United States must apply through the

Office of International Admissions
Campus Box 185
P.O. Box 173364
Denver, CO 80217-3364

All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials. Learn more in the International Students (p. 44) section of the catalog.

Program Requirements

Two MS degree programs are available.

- Plan I - Master's Thesis: This plan requires 24 semester hours of graduate-level course work and 6 semester hours of master's thesis credit.
- Plan II - Master's Report: This plan requires 27 semester hours of graduate-level course work and 3 semester hours master's report credits.

Master of engineering students must follow Plan 2 above. Additionally, of those 30 semester hours, at least 15 hours must be completed with CE classes, including the master's report. The remaining hours may be completed in related disciplines that supplement the chosen area of study. Both the MS and MEng degrees require satisfactory completion of a written comprehensive exam and an oral defense of the master's thesis or master's report to a committee of at least three graduate faculty. Every graduate student must also satisfy the degree requirements of the Graduate School on the Denver campus, specified in the Information for Graduate Students chapter of this catalog. Both the MS and the MEng degree programs must be completed within seven years of the date the student begins the degree program.

Courses for both the MS and MEng degree programs are selected by mutual agreement of the student and his/her faculty advisor after admission to the degree program. The advisor may also specify undergraduate courses that must be completed before starting graduate course work, but these will not count toward the semester hour

requirements for the degree. The student's thesis or report topic must also be approved by the faculty advisor.

Civil Engineering, PhD

Introduction

Graduate School Policies and Procedures (p. 59) apply to this program.

The PhD degree in civil engineering is offered through a coordinated program with the University of Colorado Boulder.

Specialty Areas for Degrees:

- Civil engineering systems
- Geotechnical engineering
- Hydrologic, Environmental, and Sustainability Engineering
- Structural Engineering
- Transportation Engineering

Note: The multidisciplinary engineering and applied science PhD is also offered through the Department of Civil Engineering.

What is Civil Engineering Systems?

The doctoral program in civil engineering systems has different rules than the four other traditional doctoral tracks in order to facilitate more interdisciplinary research. This doctoral track can be the degree that would follow a master of engineering.

Additional Doctoral Admissions Requirements

In addition to the admissions requirements listed for master's students, doctoral applicants need to have the support of a faculty advisor before they are admitted. Once doctoral students are approved by the graduate admissions committee, their application must be reviewed again by the Department of Civil, Environmental and Architectural Engineering at CU Boulder as the programs are jointly administered. Prospective PhD students should contact the Department of Civil Engineering at CU Denver to inquire about application requirements and to obtain the "Rules and Policies for the Coordinated PhD Program."

Requests for applications for graduate study in civil engineering should be addressed to

CU Denver Department of Civil Engineering
Campus Box 113
P.O. Box 173364
Denver, CO 80217-3364

Degree Components:

The PhD in civil engineering systems requires the completion of at least 60 credit hours, including at least 30 dissertation research hours and at least 30 credit hours of coursework relevant to the student's dissertation research. Nine (9) credit hours must be completed at CU Boulder.

Doctoral students may transfer up to 15 credit hours toward their required coursework, but not for dissertation hours. Students who complete their master's degree at CU Denver or CU Boulder may transfer up to 21 credit hours.

Program Requirements:

Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination.

Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.

The program must be completed within eight years of the date the student begins the degree program.

Degree Requirements:

Students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Construction Project Management Graduate Certificate

Introduction

The Construction Project Management (CPM) Certificate is a four-course certificate designed to build skills and teach critical management tools and techniques that enable individuals and teams to run projects within schedule, budget and quality requirements. This certificate focuses on the challenging and growing field of construction project management and is designed for working or aspiring professionals and graduate students interested in developing a level of expertise in construction project management.

The certificate starts with two required classes on project management that teach the fundamentals of the International Project Management Institute's (PMI) Project Management Body of Knowledge and provide a solid foundation for anyone involved in project or program management. The PMI program is based on rigorous standards and ongoing research to meet the real-world needs of organizations worldwide. The electives focus on various components of the PMI knowledge areas-project integration, scope, time, cost, quality, human resource, communications, risk, procurement and stakeholder management- from a construction engineering and management perspective.

You can earn graduate-level credit for each course successfully completed and earn the CPM certificate upon completion of the four courses and can take these courses as a non-degree student or by being enrolled at the University of Colorado Denver. Students must have a bachelor's degree to take these classes. These courses can also be used to partially fulfill requirements for the Master of Engineering in Construction Engineering and Management or other eligible graduate programs.

Contact the Department of Civil Engineering (p. 186) for more information.

Program Requirements

Code	Title	Hours
Required		
CEMT 5236	Project Management Systems	3
CEMT 5237	Advanced Project Management	3
Electives		
Select a minimum of two of the following:		6
CVEN 5087	Engineering Contracts	
CEMT 5232	Construction Planning and Control	
CEMT 5233	Construction Cost Estimating	
CEMT 5234	Sustainable Construction	
CEMT 5235	Advanced Construction Engineering	
CEMT 5238	Integrated Construction Leadership	
CVEN 5800/ IWKS 4930	Special Topics	
Total Hours		12

Engineering and Applied Science, PhD

Introduction

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing (p. 181) and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering (p. 186)
- Computer Science and Engineering (p. 201)
- Electrical Engineering (p. 214)
- Mechanical Engineering (p. 227)

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to engineering.ucdenver.edu (<http://engineering.ucdenver.edu>) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering (p. 182). The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

Graduate School Policies and Procedures (p. 59) apply to this program.

Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found at engineering.ucdenver.edu/graduate-admissions.

Program Requirements

The minimum degree requirements consist of:

- 30 semester hours of course work in the primary and secondary areas of concentration
- 30 semester hours of research/dissertation credit
- Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination.
- Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.
- Program must be completed within eight years of the date the student begins the degree program.

NOTE: for students applying through the Department of Civil Engineering, students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Geographic Information Systems and Geomatics Graduate Certificate

Introduction

The graduate certificate in geographic information systems (GIS) is designed to supplement knowledge needed in the professional work environment or as a way to see if a graduate degree in GIS is a good fit. Students may earn this certificate without formal admission to a master's degree program in engineering if they take these classes as a non-degree student.

Program Requirements

The GIS graduate certificate requires the successful completion of four core GIS classes with a grade of B- or better; any prerequisites for those individual classes are also required.

Code	Title	Hours
CVEN 5381	Introduction to Geographic Information Systems	3
CVEN 5382	Geospatial Data Development	3
CVEN 5384	GIS Project Management	3
CVEN 5385	GIS Relational Database Systems	3
CVEN 5386	GIS Laboratory	3
CVEN 5387	Advanced Remote Sensing	3
CVEN 5390	Interactive Web Mapping GIS	3
CVEN 5391	Introduction to Geomatics	3
CVEN 5392	Unmanned Aerial Systems	3
CVEN 5395	GPS/GNSS	3
CVEN 5396	HDS/LiDAR Tools & Data Analyses	3
CVEN 5397	Unmanned Aerial Systems Data processing	3

For more information about geomatics and geographic information systems at CU Denver, visit our research page ([https://](https://engineering.ucdenver.edu/civil-engineering/research-specialty-areas/geomatics-gis/)

engineering.ucdenver.edu/civil-engineering/research-specialty-areas/geomatics-gis/).

For general information contact the Department of Civil Engineering at civilengineering@ucdenver.edu.

Integrated Construction, Management + Leadership Graduate Certificate

Business School:

303.315.8110 or 303.315.8111
grad.advising@ucdenver.edu

College of Engineering, Design and Computing | Civil Engineering:

303.315.7160
civilengineering@ucdenver.edu

College of Architecture and Planning: Leo Darnell

303-315-1015
leonard.darnell@ucdenver.edu

Introduction

The College of Architecture and Planning, the College of Engineering, Design and Computing, and the Business School at the University of Colorado Denver have formed a partnership to create an innovative and interdisciplinary leadership program. The Integrated Construction, Management and Leadership (ICML) Certificate is a four-course certificate designed to launch designers, architects, engineers, and business entrepreneurs into the world of construction or rapidly update an existing skill-set.

As disciplinary identities, project boundaries, and conventional markets blur, leadership, management skills, and civic mindfulness are key aspects to successfully navigating a rapidly transforming 21st century built environment. Many new ideas are emerging around how projects are conceived and delivered that better integrate the complex relationships among finance, marketing, design, and construction. These new interdisciplinary management and construction techniques streamline the construction of increasingly large-scale and complex projects. Leadership skills are necessary for success in the central activities of contemporary engineering, architectural design firms, business, government, and non-profits. The demands of project management in firms today involve more than specific technical expertise in a given field. Firms need creative individuals who can effectively innovate, execute, and communicate across disciplines. This certificate program capitalizes on these changes and the new opportunities they present.

ICML is an interdisciplinary program designed for working or aspiring professionals, and upper-level students interested in expanding their knowledge base in the fields of engineering, architecture, business, and their intersections. The courses include introductions to and explorations of current trends in the construction industry, project management and building information modeling (BIM). The final course is an integrated course that brings together top executives in the architecture, engineering and construction (AEC) business to discuss current industry topics and provides students an opportunity to apply principles from the various fields to case study projects.

- Students can earn graduate-level credit for each course they successfully complete. If students have an undergraduate degree,

they can earn the ICML Certificate upon completion of all four courses.

- They can take the courses as a non-degree student or while enrolled in a degree program at the University of Colorado Denver.
- The courses can be used to partially fulfill requirements for the MEng in Construction Engineering and Management or other eligible graduate programs such as the Master of Architecture degree upon acceptance into these programs.
- Approved courses in this Certificate may also count toward related Certificates offered by the Business School and Construction Engineering and Management.

Certificate Requirements

Code	Title	Hours
ARCH 6475	BIM/Flow of Information	3
BANA 6650	Project Management	3
or CEMT 6237	Advanced Project Management	
CEMT 6235	Advanced Construction Engineering	3
ARCH 6413	Construction Leadership	3
or CEMT 5238	Integrated Construction Leadership	
Total Hours		12

Note: A grade of B- or higher is required in all courses applied toward the certificate.

Computer Science and Engineering

Chair: Gita Alaghband

Program Manager: Christina Ridd

Administrative Assistant: Megan Rogers

Office: Lawrence Street Center, 8th Floor

Telephone: 303-315-1408

Website: engineering.ucdenver.edu/cse/ (<http://engineering.ucdenver.edu/cse/>)

Overview

Mission Statement

With the advances in technology and the rapid and prevalent growth of the information-based economy, computer science has become an enabling science for nearly all disciplines that impact engineering, science, business, health and government. The future of the discipline promises even more innovative advances. The Department of Computer Science and Engineering at the University of Colorado Denver is committed to providing outstanding education and research training to our diverse undergraduate and graduate students for productive careers in industry, academia and government in the Denver metropolitan area, state and beyond. Our faculty strives for excellence in teaching, research and service by covering a broad spectrum of the discipline's core fundamentals, as well as applied aspects including those of interdisciplinary nature. We actively engage our students in classroom and out-of-classroom research and help them develop the skills needed to solve complex real-world technological problems of modern society.

The Department of Computer Science and Engineering offers MS and PhD degrees:

- The MS degree (p. 212) is awarded in computer science (CS) to those students who wish to pursue graduate studies to further

develop their education. The MS in CS graduate program covers the core knowledge of key concepts of computer science as well as offers flexibility to pursue specializing in various fields of interests.

- A **track in Data Science in Biomedicine** is offered as a MS thesis option. Students who choose this track will adopt biomedical applications of data science to learn data science methodologies and technologies.
- The graduate certificate in software engineering is designed for working professionals, or computer science students beginning their careers, who are in the field of software engineering and/or software development.
- The graduate certificate in cybersecurity & defense is designed for working professionals in the field of computer science, network and/or security operations. The certificate program in Cyber Security and Defense will prepare Computer Science professionals to identify, analyze, and mitigate technical cybersecurity related vulnerabilities, exploits and attacks against network and critical cyber infrastructure.
- The Computer Science and Information Systems PhD (p. 211) is awarded from the College of Engineering, Design and Computing.
- The multidisciplinary Engineering and Applied Science PhD degree is available through the Department of Computer Science and Engineering.

Most up-to-date information on all programs offered through the Computer Science and Engineering Department can be obtained from the department's website at: engineering.ucdenver.edu/cse/ (<http://engineering.ucdenver.edu/cse/>).

Graduate Programs

The Department of Computer Science and Engineering (CSE) offers a master of science in computer science (p. 212). The CSE department also offers a doctoral degree in computer science and information systems (p. 211). In addition, the engineering and applied science doctor of philosophy degree (p. 214) is available through the CSE department.

Expertise expand several areas of research including algorithms, artificial intelligence, big data management & mining, cloud computing, computer architectures, computer graphics, computer networks, computer security, cyber-physical systems, cyber security & defense, data science, database systems, distributed computing, graph theory, high-performance computing, Internet, machine learning, mobile computing, operating systems, parallel and distributed systems, software engineering and virtual reality.

Computer Science and Information Systems (CSIS) PhD

The Computer Science and Information Systems PhD is awarded from the College of Engineering, Design and Computing. The CSIS PhD supports interdisciplinary research between computer science and many fields of interest.

Our students work with research centers and researchers from a variety of disciplines, including the CU School of Medicine, chemistry, mathematics, biology, all engineering disciplines, economics, health, and education, in addition to industry and businesses. This distinctive infrastructure supports basic research in both computer science and information systems as well as the demand of computing and IT integration with all other scientific and business fields.

Advisor

Upon entering the program, each chooses an advisor to provide mentoring and guidance throughout the program and work with the student to prepare a program of study. Requests to change advisors must be approved by the program director, and this happens in very rare circumstances.

Program Requirements and Milestones

For details about program requirements in the computer science track, see the CSIS PhD Handbook.

Engineering, Design and Computing PhD

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to engineering.ucdenver.edu (<http://engineering.ucdenver.edu>) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering. The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

Degree Requirements

The minimum degree requirements consist of 30 semester hours of course work in the primary and secondary areas of concentration, as well as 30 semester hours of research/dissertation credit. Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination. Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.

Program Requirements and Milestones

For details about program requirements in the computer science track, see the CSIS PhD Handbook.

Admissions to Computer Science and Engineering Graduate Programs

Requests for applications for graduate study in computer science and engineering should be addressed to:

Graduate School

Campus Box 163
P.O. Box 173364
Denver, CO 80217-3364

Courier Address (UPS, FEDEX, etc.):

Graduate School
1380 Lawrence Street, Suite 1251
Denver, CO 80204

Contact Email: graduateschool@ucdenver.edu
Phone: 303-315-2179

All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

Master of Science (MS) in Computer Science

Admission Requirements

Applicants should hold a bachelor's degree from an institution comparable to the University of Colorado. They need to have sufficient programming experience and mathematical maturity to understand advanced courses. Qualified applicants holding a degree outside computer science or equivalent fields may need to take additional foundational undergraduate courses before starting the graduate program.

Admission decisions are based on prior academic performance, letters of recommendation, English proficiency, if applicable, as well as the applicant's written statement of purpose.

Additional requirements include:

1. 10 credit hours, on the semester basis, of university-level calculus
2. at least one math course beyond calculus, such as advanced calculus, differential equations, linear algebra, probability, statistics or combinatorial analysis.

Students lacking some of these requirements, whose background is otherwise satisfactory, may be admitted with the understanding that the certain undergraduate courses have to be completed after admission. Additional information regarding the admissions process may be found at engineering.ucdenver.edu/cse (<http://engineering.ucdenver.edu/cse/>).

Required GPA

Regular admission: Applicants should have an undergraduate GPA of at least 3.0.

Transfer Credit

A maximum of 9 semester hours of graduate course work may be transferred into the program based on department approval. In principle, core courses must be taken from the CSE department at CU Denver.

Note: Candidates applying for MS study will be individually evaluated by the department's graduate committee. A letter with a decision will be sent to the applicant by the graduate committee chair.

Computer Science and Information Systems (CSIS) PhD

Admission

Admission criteria include GPA (undergraduate and graduate), letters of recommendation, prior achievements in academia and industry and an

application portfolio essay describing an applicant's motivation and an initial plan for doctoral study. The application portfolio is important to gauge an applicant's motivation for research training.

Exceptionally motivated students with BS degrees in computer science, information systems, or closely related fields may apply to the CSIS PhD program directly. Students without a master's degree must complete at least 30 hours of CSIS PhD required course work in addition to the 30 hours of dissertation.

Engineering and Applied Science PhD

Graduate School Policies and Procedures (p. 59) apply to this program

Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found under the Degree Programs link on each host department's website.

- Civil Engineering (engineering.ucdenver.edu/civil (<http://engineering.ucdenver.edu/civil/>))
- Computer Science and Engineering (engineering.ucdenver.edu/cse (<http://engineering.ucdenver.edu/cse/>))
- Electrical Engineering (engineering.ucdenver.edu/electrical (<http://engineering.ucdenver.edu/electrical/>))
- Mechanical Engineering (engineering.ucdenver.edu/mechanical (<http://engineering.ucdenver.edu/mechanical/>))
- Computer Science and Information Systems, PhD (p. 211)
- Computer Science, MS (p. 212)
- Cybersecurity and Defense Graduate Certificate (p. 213)
- Engineering and Applied Science, PhD (p. 214)
- Software Engineering Graduate Certificate (p. 214)

Faculty

Professors

Gita Alaghband, PhD, University of Colorado
Research areas: parallel and distributed systems, parallel algorithms, applications and languages, high-performance computing

Tom Altman, PhD, University of Pittsburgh
Research areas: algorithms, optimization, theory

Min-Hyung Choi, PhD, University of Iowa
Research areas: computer graphics, animation, virtual reality, human computer interface

Dave Ogle, PhD, Ohio State University
Research areas: networks

Douglas Sicker, PhD, University of Pittsburgh
Research areas: cybersecurity and wireless systems

Associate Professors

Ellen Gethner, PhD, University of British Columbia; PhD, Ohio State University
Research areas: graph theory, number theory, combinatorics, discrete geometry, computational geometry, visualization, algorithms

Ilkyeun Ra, PhD, Syracuse University

Research areas: computer networks, cloud computing, high-performance computing, distributed computing systems

Assistant Professors

Mazen Al Borno, PhD, University of Toronto
Research areas: computational motor control and mobile health

Farnoush Banaei-Kashani, PhD, University of Southern California
Research areas: big data, data science, data management and mining, database systems, applied machine learning, computational biomedicine and biology

Ashis Biswas, PhD, University of Texas at Arlington
Research areas: machine learning, data mining, big data analysis, bioinformatics

Madhuri Debnath, PhD, University of Texas at Arlington, Clinical Teaching Track
Research areas: data mining, spatio-temporal data analysis, data science, machine learning

Liang He, PhD, Nankai University
Research areas: cyber-physical systems, cognitive battery management, IoTs, mobile computing

Haadi Jafarian, PhD, University of North Carolina Charlotte
Research areas: proactive security for cyber threats, big data analytics for cyber threat intelligence, security for cyber-physical systems & critical infrastructures, security for IoTs, security analytics & automation, science of security

Salim Lakhani, PhD, Purdue University
Research areas: cloud computing and security, distributed computing & database systems

Zhengxiong Li, PhD, SUNY Buffalo
Research areas: Internet of Things, cybersecurity, emerging technologies and applications

Senior Instructor

Diane Yoha, MS, University of Colorado Denver, Clinical Teaching Track
Research areas: artificial intelligence, linguistic geometry, natural language processing

Professor Emeriti

Boris Stilman, PhD, National Research Institute for Electrical Engineering, Moscow, Russia

Computer Science (CSCI)

CSCI 5010 - Software Architecture (3 Credits)

This course will focus on two major areas. The first part of the course will cover Software Requirements Analysis and Development as well as Software Architecture and the Soft Skills needed by high level Software Architects. The second part of the course will cover how Persistent Data fits into different types of Software Systems. The primary focus of the second part of the course will be on incorporating larger scale Enterprise Data Systems into Software Systems and will be an application of the first part of the course material. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5011 - Software Project Management Support (3 Credits)

Large Software Systems must be Planned, Scheduled, and Staffed. To accomplish these tasks Software Engineers must understand the Software Architecture, the Software System Dependencies, Effort Estimation and the various Project Development Models that might be used. This course will look at different Project Models, Project Management Needs, and various Effort Estimation tools and techniques. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5098 - Computer Science for Bioscientists (3 Credits)

Provides a broad but detailed overview of the computer science field to graduate students in the biosciences, with emphasis on web technologies, programming languages, algorithms and database systems. No credit for CS graduate students. Prereq: Working knowledge of programming language (e.g., Java). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 5110 - Applied Number Theory (3 Credits)

Every year, Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, special diophantine equations, cryptography, computer security, and engineering applications. Cross-listed with CSCI 4110. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5172 - Complexity and Problem Solving (3 Credits)

Theoretical and practical aspects of solving complex problems, in particular, but not limited to, NP-complete and PSPACE-complete problems. Various heuristic and approximation algorithms, including greedy, ant, and Genetic Algorithms will be studied. This course is by instructor's permission only. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5211 - Mobile Computing and Programming (3 Credits)

This course contains two main simultaneous tracks, namely mobile computing and mobile programming. A series of lectures on various aspects of mobile computing provides an understanding of challenges and solutions in design and implementing mobile systems. The main topics include mobile sensing, human mobility and its technical implication. Students are expected to have undergraduate knowledge of operating systems and computer networks. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5217 - Information Theory (3 Credits)

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5220 - Social Networks & Informatics (3 Credits)

The main topics covered by the course will include 1) social network data structures, 2) basic random graph models and graph algorithms; 3) recommendation systems and predictive models 4) query suggestion and content analysis 5) link analysis and community detection 6) the spread of information, disease, and influence on networks. This course builds a solid foundation in social informatics technology. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5255 - Object Oriented Design (3 Credits)

Software system design using object-oriented techniques, responsibility driven design and agile development practices. Topics include objects, classes, interfaces, inheritance, polymorphism, exception handling and testing. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5407 - Security & Cryptography (3 Credits)

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGamal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 7407. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5408 - Applied Graph Theory (3 Credits)

Introduces discrete structures applications of graph theory to computer science, engineering and operations research. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits. Matching and covering problems, shortest route and network flows.

Restriction: Restricted to students with graduate standing. Note: Expected knowledge of abstract mathematics including discrete structures. Cross-listed with MATH 4408. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5409 - Graph Theory and Graph Algorithms (3 Credits)

Studies geometric graphs and other geometric objects, both analysis and algorithmic construction, leads to interesting connections among VLSI design, graph theory and graph algorithms. Studies a subset of the recent literature, with special emphasis on visibility graphs, thickness of graphs, graph coloring and the surprising and elegant connections among them all. Other topics are introduced as time permits. Prereq: CSCI 5408. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 5408. Restriction: Restricted to student with graduate standing.

CSCI 5411 - Computational Geometry (3 Credits)

Many practical and aesthetic algorithmic problems have their roots in geometry. Applications abound in the areas of computer graphics, robotics, computer-aided design, and geographic information systems, for example. A selection of topics from convex hull, art gallery problems, ray tracing, point location, motion planning, segment intersection, Voronoi diagrams, visibility and algorithmic folding will be covered. Cross-listed with CSCI 4411. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5446 - Theory of Automata (3 Credits)

Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Cross-listed with MATH 5446. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5451 - Algorithms (3 Credits)

Advanced design and analysis techniques: dynamic programming, greedy algorithms, amortized analysis. Advanced data structures: Fibonacci heaps, union-find data structures. Study of variety of special topics, which may include: graph algorithms, optimization problems, Fast Fourier Transform, string matching, geometric algorithms, NP-completeness and approximation algorithms. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5455 - Data Mining (3 Credits)

Introduces concepts, techniques and methodologies to discover patterns in data. Topics include (but are not limited to) data preprocessing and cleansing, data warehousing, pattern mining, classification, prediction, cluster analysis, outlier detection, and online data analytics. Restriction: Graduate Standing. Cross-listed with CSCI 4455. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5542 - Neural Networks (3 Credits)

Parallel distributed representations, dynamics of Hopfield-style networks, content addressable memories, and Hebbian learning are the major topics of the first half. The last half consists of simulated annealing back propagation, competitive learning, and self-organizing networks.

Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 7551. Max hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 7552. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5559 - Database Systems (3 Credits)

Introduces database system concepts, with examination of relational database systems from conceptual design through relational schema design and physical implementation. Topics include database design and implementation for large database systems, transaction management, concurrency control, object-oriented and distributed database management systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5565 - Introduction to Computer Graphics (3 Credits)

Introduces two and three dimensional computer graphics. Topics include scan conversion, geometric primitives, transformation, viewing, basic rendering, and illumination. Emphasis is on the programming using C and C++ Open GL. Cross-listed with CSCI 4565. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5570 - Virtual and Augmented Reality (3 Credits)

This course covers the fundamental concepts and technologies of virtual and augmented reality, and it introduces recent advances in the field. Topics include 3D user interaction, immersive environments, tele-presence, mobile AR, human perception, and VR/AR applications.

Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4570. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5573 - Operating Systems (3 Credits)

Students study the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system. Topics include I/O devices, Disk Scheduling, File System Organizations, Directory Systems, Sequential and Concurrent process, CPU Scheduling, Memory Management, Deadlock, Process and Threading, and review of some related articles in the literature. Prereq: Expected knowledge of operating systems equivalent to CSCI 3453.

Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 7574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5575 - Cyber-Physical Systems (3 Credits)

Cyber-physical systems (CPS) bridge the cyber-world of computing, communication and control with the physical world. This course offers an interdisciplinary perspective of CPS within computer science and its applications to understand the issues in the full lifecycle of CPS. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5580 - Data Science (3 Credits)

Introduces concepts and techniques that enable data cycle from data extraction to knowledge discovery, including but not limited to data exploration, hypotheses testing, data organization, data featurization, supervised and unsupervised data modeling and learning, scaling-up analytics, and data visualization. Restriction: Graduate Standing. Cross-listed with CSCI 4580. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making.

Emphasis on various types of knowledge representation. Restriction:

Restricted to students with graduate standing. Cross-listed with CSCI 7582. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5585 - Advanced Computer Graphics (3 Credits)

An in-depth study of active research topics in computer graphics. Topics include advanced rendering, global illumination, scientific visualization, geometric modeling, simulation and animation. Emphasis is on readings from literature and on a term project. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5593 - Advanced Computer Architecture (3 Credits)

Important concepts in the structural design of computer systems are covered. Topics include memory hierarchy, super pipelining and super scalar techniques, dynamic execution, vector computers and multiprocessors. Expected knowledge of Computer Architecture equivalent to CSCI 4591. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5595 - Computer Animation (3 Credits)

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5610 - Computational Biology (3 Credits)

Designed to introduce a broad range of computational problems in molecular biology. Solution techniques draw from several branches of mathematics: combinatorics, probability, optimization, and dynamical systems. No prior knowledge of biology is critical, but it would be at least helpful to have the equivalent of BIOL 5099. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to students with graduate standing.

CSCI 5619 - Complex Intelligent Systems (3 Credits)

Presents the cutting-edge results of research in AI: advanced topics in linguistic geometry. LG is an approach to construction of mathematical models for reasoning about large-scale multi-agent concurrent games. The purpose of LG is to provide strategies to guide the participants of a game to reach their goals. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5630 - Linguistic Geometry (3 Credits)

Linguistic Geometry (LG) is a type of Game Theory in Artificial Intelligence, which permits to overcome combinatorial explosion and generate optimal strategies in real time. LG is currently changing the paradigm of military command and control in the USA and abroad. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5640 - Universal Compiler: Theory and Construction (3 Credits)

Theoretical foundations and step-by-step hands-on experience in the development of a compiler, which can tune itself to a new programming language. This is a must-take course for future software developers as well as those interested in applications of the theory of Computer Science. Cross-listed with CSCI 4640. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5654 - Algorithms for Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 7654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5660 - Numerical Analysis I (3 Credits)

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Cross-listed with CSCI 4650, MATH 4650, and MATH 5660. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5661 - Numerical Analysis II (3 Credits)

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Cross-listed with CSCI 4660, MATH 4660 and 5661. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

Typically Offered: Spring.

CSCI 5667 - Introduction to Approximation Theory (3 Credits)

Normed linear spaces, convexity, existence and uniqueness of best approximations. Tchebychev approximation by polynomials and other related families. Least squares approximation and splines. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5682 - Expert Systems (3 Credits)

Reviews and analyzes many expert systems documented in the literature, such as Mycin, Macsyma, and Xcon. Emphasis is given to the design of rule-based systems, the use of uncertain and incomplete information and system shells. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5690 - Knowledge Representation for Intelligent Systems (3 Credits)

An in-depth study of different types of knowledge representation in artificial intelligence for the efficient control of complex real-world systems like autonomous robots, space vehicles, and military units. Major emphasis is on search algorithms and heuristics, logical representation with applications to planning, formal linguistic representation. At the conclusion, all the theories studied are combined in the form of introduction to the state-of-the-art linguistic geometrical representation of complex control systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5701 - High-Performance Communication Systems and Network Analysis (3 Credits)

Protocols and architectures related to high performance communication systems as well as network performance analysis techniques are covered. Topics include Integrated Services Digital Networks (ISDN), Broadband ISDN, protocols such as ATM and SONET, and high performance network architectures such as optical networks. Analytical analysis of network performance includes queuing theory and stochastic processes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5702 - Big Data Mining (3 Credits)

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 7702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5704 - Introduction to Distributed Systems (3 Credits)

Studies design, implementation and management of distributed systems, including communication issues, security reliability, resource sharing, and remote execution. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5728 - Software Engineering (3 Credits)

Groups of students plan, analyze and design large software projects. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5741 - Principles of Cybersecurity (3 Credits)

Focuses on the most common threats to cybersecurity as well as ways to prevent security breaches or information loss. Topics will include: understanding and thwarting hacker methods, authentication, cryptography, programming security, malware analysis, web, database and file server security, network and enterprise security methods. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5742 - Cybersecurity Programming and Analysis (3 Credits)

Focuses on cybersecurity related programming and analysis skills. Topics include: network and security application development, intrusion detection, automating security hardening. Students will design and develop security applications in multiple programming languages. Undergraduate algorithms and programming knowledge expected. Cross-listed with CSCI 4742. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5743 - Cyber and Infrastructure Defense (3 Credits)

Presents analytical study of state-of-the-art attack and defense paradigms in cyber systems and infrastructures. Analysis will focus on: theoretical foundations of cybersecurity, practical development of novel technical defense techniques and analysis of alternatives. Knowledge of undergraduate-level networking. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4743. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 7765. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5771 - Introduction to Mobile Computing (3 Credits)

Provides the fundamentals of mobile computing. Studies existing and proposed solutions for ubiquitous computing. This course focuses on systems and networking issues involved with supporting mobility. Cross-listed with CSCI 4771. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5772 - Mobile and IoT Security (3 Credits)

This course concentrates on the computing of emerging mobile and IoT systems security in the Computer Science domain. The seminar will discuss recent research on computing for mobile user authentication, vulnerability risk detection of mobile/IoT systems, and software based defense mechanism. Restriction: Restricted to graduate school standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5780 - Theory of Distributed Computing (3 Credits)

Elements of the theory of distributed computing through fundamental algorithmic ideas, lower bound techniques, and impossibility results.

Timing assumptions (asynchrony and synchrony), simulations between models (message passing and shared memory), failure types (crash and Byzantine). Restriction: Restricted to students with graduate standing.

Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5799 - Cloud Computing (3 Credits)

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing. Cross-listed with CSCI 7799. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 5800 - Special Topics (3 Credits)

These special topics courses cover recent developments in an aspect of computer science. Restriction: Restricted to students with graduate standing. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to students with graduate standing.

CSCI 5840 - Independent Study (1-3 Credits)

For graduate computer science students. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

CSCI 5866 - Advanced Mobile and Ubiquitous Systems (3 Credits)

This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5920 - Computer Game Design and Programming (3 Credits)

Computer Game Design and Programming introduces practical and example driven approaches to modern 3D game development. Topics include 3D modeling, character animation, UI design, level design, scripting, texture mapping, and sound effect. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5930 - Machine Learning (3 Credits)

Provides theoretical and computational foundations in machine learning to design and develop intelligent applications to perform object recognition, personalized recommendations, improve cybersecurity, fact-checking, forecasting and finding communities based on three classes of algorithms: supervised, unsupervised, semi-supervised and reinforcement learning. Restriction: Graduate Standing. Cross-listed with CSCI 4930. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5931 - Deep Learning (3 Credits)

Provides a foundation on deep learning; a sought-after skill in machine learning. Topics include neural network design & learning, restricted Boltzmann machine, convolution neural network, recurrent neural network, LSTMs, deep reinforcement learning, autoencoders, and evolving computation frameworks like TensorFlow, Keras. Restriction: Graduate Standing. Cross-listed with CSCI 4931. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5939 - Internship (1-3 Credits)

Faculty or employer-supervised employment in industry. Enrollment is limited to students who fully complete a contract for cooperative education credit by the last day of the drop or add period. Students who want to enroll this course should submit an official job description that must clearly show the level of work requires a bachelor's degree in the computer science field or equivalent work experience. This course will not be counted towards either MSCS or PhD in CSIS or EAS. Prereq: Complete at least two of category A courses (for MS) or complete Preliminary exam (for PhD) and 3.0 or better GPA. Restricted to students with a minimum of 1 full academic year of study at the graduate level. Repeatable. Max Hours: 3 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 3.

CSCI 5941 - Directed Study: Programming Project (3 Credits)

Software development project supervised by a faculty member approved by the Center for Computational Biology. Used towards a certificate in Computational Biology. Counts as an independent study. Prereq: CSCI 5451 and CSCI 5610. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5951 - Big Data Systems (3 Credits)

Presents a practical while in-depth review of the principles of a series of modern data processing systems (e.g., Hadoop, Spark, TensorFlow) designed to address the Big Data challenges. In combination, these systems enable the data to knowledge (Big) data lifecycle. Restriction: Restricted to Graduate standing. Cross-listed with CSCI 5951. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5952 - Big Data Science (3 Credits)

Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 7952. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6010 - Principles of Programming (3 Credits)

This course introduces students to fundamental principles and techniques in the design and implementation of modern programming such as C++, Java. Students learn how to write programs in an object oriented high level programming language. Weekly laboratory assignments will provide hands-on experience in this course. (non-CS majors) Prereq: meet MAPS requirements and familiarity with computer use. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 6020 - Data Structures and Algorithms (3 Credits)

This course introduces students to fundamental skills in computer science such as data structures and computer algorithms. Students will learn how to design efficient algorithms and analyze them. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

D-EN-Pre: CSCI 6010

CSCI 6030 - Computer Systems & Application (3 Credits)

This course surveys essential technologies such operating systems, database systems, and the Internet. Students study the basic of operating systems, database systems, and the Internet. Weekly laboratory experiments will provide hands-on experience. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

D-EN-Pre: CSCI 6010

CSCI 6040 - Teaching Practice of Computer Science (3 Credits)

This course provides students the opportunity for practicing and developing courses for adolescents using previously acquired knowledge. Students will design and develop a computer science class of their interest and appropriate to their area of expertise which they will offer at their school. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 6020 and 6030

CSCI 6595 - Computational Methods in Nonlinear Programming (3 Credits)

Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate directional methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6664 - Numerical Linear Algebra (3 Credits)

Offered every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6950 - Master's Thesis (1-9 Credits)

Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

Additional Information: Report as Full Time.

CSCI 6960 - Master's Report (3 Credits)

Students seeking a Master of Science in computer science, who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under supervision of a full-time CS graduate faculty. Student must present their results to a faculty committee. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CSCI 6970 - MS Research Report (0 Credits)

This course is for students who select the Plan III (Course Only) option to complete their MS degree requirements. Graduating students must register for this course their final semester and submit a final written research paper on a subject specified by a CSE faculty committee.

Grading Basis: Pass/Fail Only

CSCI 7002 - Computer Security (3 Credits)

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric crypto systems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more.

Prereq: CSCI 5451. Cross-listed with ISMG 7002. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7173 - Computational Complexity and Algorithms (3 Credits)

A solid, in-depth theoretical foundations in computing, computational complexity, and algorithmics. Various algorithms, including both discrete and non-discrete problem domains. NP-complete and other complete classes of problems/languages. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 5446

CSCI 7200 - Advances in Management Information Systems (3 Credits)

Provides a broad coverage of research on the management of information technology. The course covers the systems-oriented research, organizational-oriented research, and information systems economics research. Prereq: PhD standing. Cross-listed with ISMG 7200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7210 - Topics in Analytical Research in Management Information Systems (3 Credits)

Covers a variety of analytical research topics of interest to the IS research community including the evaluation of data mining algorithm performance, cost sensitive learning and outlier detection. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7211 - Topics in Behavioral-Organizational Research in Management Information Systems (3 Credits)

Provides in-depth exposure to some key behavioral, management and organizational theories and models used in Information Systems research. Covers topics in socio-technical, trust, computer self-efficacy, organizational transformation, organizational learning, resource-based and coordination theories. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7211. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7407 - Security & Cryptography (3 Credits)

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGamal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 5407. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7502 - Research Methods (3 Credits)

Promotes research skills. Involves presenting a research topic and discussions of its merits, reviewing journal articles, writing a paper and/or a proposal in the NIH/NSF format in the student's area of research. Prereq: PhD student standing or permission of instructor for MS students who are writing a thesis. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 5551. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 5552. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 5574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 5582. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7595 - Computer Animation (3 Credits)

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7654 - Algorithms for Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 5654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7702 - Big Data Mining (3 Credits)

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 5702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7711 - Bioinformatics I (4 Credits)

(BIOL 7711-Offered on a semester basis from H.S.C.) What is Bioinformatics and why study it? How is large-scale molecular biology data generated, where and how can researchers gain access to it, what computational analyses are possible and computational techniques for solving inference problems in molecular biology? Prereq: Permission of instructor. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

CSCI 7712 - Bioinformatics II (4 Credits)

(BIOL 7712-offered on a semester basis from H.S.C.) Inference problems and computational techniques for molecular biology, with emphasis on machine learning approaches. Use of computational induction techniques focused on information extraction from biomedical literature, inference of biochemical networks from high-throughput data and prediction of protein function. Estimation, clustering, discrimination and regression. Prereq: CSCI 7711. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

CSCI 7765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 5765. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7799 - Cloud Computing (3 Credits)

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing.

Cross-listed with CSCI 5799. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 7800 - Special Topics (3 Credits)

These special topics courses cover recent developments in an aspect of computer science. Prereq: As determined by instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7840 - Independent Study (1-6 Credits)

Offers doctoral students opportunity for independent, creative work under supervision of a CSE full-time graduate faculty. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CSCI 7866 - Advanced Mobile and Ubiquitous Systems (3 Credits)
This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 7952 - Big Data Science (3 Credits)
Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 5952. Max Hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 8990 - Doctoral Dissertation (1-9 Credits)
Repeatable. Max hours: 9 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 9.
Additional Information: Report as Full Time.

Engineering (ENGR)

ENGR 5150 - Seminar: Special Topics in Engineering (1 Credit)
A flexible seminar format dealing with topics of special interest in engineering on a graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 7150. Max Hours: 1 Credit.

Grading Basis: Pass/Fail Only
Restriction: Restricted to graduate students
Typically Offered: Fall, Spring.

ENGR 5208 - Special Topics (1-3 Credits)
Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

ENGR 5301 - Systems Engineering: Principles and Practice (3 Credits)
Max Hours: 3 Credits.
Grading Basis: Letter Grade

ENGR 5302 - Systems Engineering: Planning and Management (3 Credits)
Max Hours: 3 Credits.
Grading Basis: Letter Grade

ENGR 5303 - Special Topics: Systems Engineering (3 Credits)
Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ENGR 5800 - Long Range Infrastructure Planning and Design: Colorado 2050 (3 Credits)
The goal of this course is to equip students to address the problems of long term future resource limitation and its influence on urban infrastructure in Colorado. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ENGR 7150 - Seminar: Special Topics in Engineering (0.5 Credits)
A flexible seminar format dealing with topics of special interest in engineering on an advanced graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 5150. Repeatable. Max Hours: 1 Credit.

Grading Basis: Pass/Fail Only
Repeatable. Max Credits: 1.
Restriction: Restricted to graduate students
Typically Offered: Fall, Spring.

Computer Science and Information Systems, PhD

Introduction

Graduate School Policies and Procedures (p. 59) to apply to this program

Program director: Gita Alaghband
Website: engineering.ucdenver.edu/CSISPhD (<http://engineering.ucdenver.edu/CSISPhD/>)

The Computer Science and Information Systems PhD is awarded from the College of Engineering, Design and Computing. The CSIS PhD supports interdisciplinary research between computer science and many fields of interest.

Our students work with research centers and researchers from a variety of disciplines, including the CU School of Medicine, chemistry, mathematics, biology, all engineering disciplines, economics, health, and education, in addition to industry and businesses. This distinctive infrastructure supports basic research in both computer science and information systems as well as the demand of computing and IT integration with all other scientific and business fields.

Admission Requirements

For more information regarding the admission requirements for the CSIS PhD, visit engineering.ucdenver.edu/CSISPhD (<http://engineering.ucdenver.edu/CSISPhD/>).

Advisor

Upon entering the program, each student chooses an advisor to provide mentoring and guidance throughout the program and work with the student to prepare a program of study. Requests to change advisors must be approved by the program director, and this happens in very rare circumstances.

Computer Science Doctoral Committee

The advisor and four other members form a doctoral committee. The advisor must be a full-time current graduate faculty member in the CSE department. One committee member may be from outside the CSE department and the information systems faculty.

Program Components

Plan of Study

A list of course work and other requirements for the degree should be prepared with the advisor and then submitted to the director for approval. The successful completion of all work indicated on the plan of study is an important prerequisite for the conferring of the degree. A plan of study

should be prepared in consultation with the student's research advisor, periodically updated, and reviewed for approval.

CS Preliminary Exam

Students are required to select three out of four core knowledge areas and pass a written exam. The exam must be taken within the first year of the program. Students may take one, two, or all three exams within the first year of their admission. Students may repeat an exam area once. A guide for the exam is available on the department website.

CS Comprehensive Exam

Students will submit a paper to fulfill the Graduate School's comprehensive exam requirement. The paper should describe an area of research including literature review, problem definition, and possible methodologies/models to study a significant problem in computer science or information systems. The paper will be evaluated by a committee of three CS faculty members. An oral presentation of the paper will be open to the entire CSIS faculty. The committee may adopt additional guidelines to evaluate the paper and presentation. According to Graduate School rules, the comprehensive exam must be completed by the end of the third year in the program. In addition to these requirements, the comprehensive exam must meet the other graduate school requirements.

Dissertation Proposal

A dissertation proposal after the student completes the comprehensive exam is required for the CSIS PhD program. The dissertation proposal will consist of a written proposal detailing the proposed work, advances in the proposed field, partial results, and future work toward completing the student's dissertation.

Dissertation Completion

Once the dissertation proposal is approved, each student prepares and submits a dissertation. The dissertation is defended before the doctoral committee in a public meeting. Final approval for the dissertation is given by a vote of the dissertation committee after the public defense.

Graduation

Upon completion of all degree requirements including the dissertation defense, the student receives the degree of doctor of philosophy in CSIS from the College of Engineering, Design and Computing.

Computer Science, MS

Introduction

Graduate School Policies and Procedures (p. 59) apply to this program

The Department of Computer Science and Engineering requires master's degree candidates to complete a program of study consisting of at least 30 semester hours of graduate level computer science courses while maintaining a grade point average of at least 3.0. According to the Graduate School Rules, graduate courses with grades below B- cannot be applied toward the completion of the graduate degree. With prior approval by the Graduate Committee, a student may substitute up to nine semester hours with graduate mathematics or other engineering courses.

Students in the CSE department are required to have a personal laptop with the following specifications:

Specifications for:	Minimum	Recommended
Operating System	Windows 10 1809+	Windows 10 1809+
CPU	Intel Core i5 dual core 1.6 GHz or Intel Core i5 quad core 1.4 GHz	Intel Core i5/i7 2.2 GHz or faster
RAM	8GB (upgradable to 16GB)	12 to 16GB
Disk Space	256GB hard disk drive with 100GB free upgradable to 512 solid state drive	512GB Solid state drive with 100
Hard Disk Space		Install Windows and application on a solid state drive
Graphic Card	integrated graphics card	dedicated graphics card
Display	1280 x 720 resolution	1920 x 1024 resolution
Network Connectivity	Ethernet + WiFi	Ethernet + WiFi

Data Science in Biomedicine Track

The Data Science in Biomedicine Track is offered under the Computer Science Master of Science degree program for students who choose Plan I - Thesis.

With this new track, students will adopt biomedical applications of data science (as a sample data science application domain) to learn data science methodologies and technologies. Upon successful graduation from the Computer Science MS program under the Data Science in Biomedicine track, students will have an official designation of data science training within their degree, which will help with employment and other opportunities.

The Data Science in Biomedicine Track requires master's degree candidates to complete a program of study consisting of at least 36 semester hours of graduate level computer science courses while maintaining a grade point average of at least 3.0. According to the Graduate School Rules, graduate courses with grades below B- cannot be applied toward the completion of the graduate degree. In this plan students will take will take three "category A" courses, a minimum of four "category B" courses, six hours of MS thesis and an additional 3 courses of electives from a list of courses related to Biomedical Computing and Informatics, Bioinformatics, Health Informatics, etc.

Adequate Progress Toward MS in Computer Science Degree

Students are expected to finish the MS degree program within five years. Candidates for the MS degree may not get credit for a course taken longer than five years before the date on which the degree is to be granted.

Students who do not enroll for any course work relevant to computer science in a given semester (summer semesters excluded) must supply the Department of Computer Science and Engineering with a written statement describing the reason for the inactivity. Students who are inactive for three consecutive semesters (summer semesters excluded) will be removed from the program, and must re-apply for admission.

Program Requirements

Students need to submit an approved Plan of Study to the department during the first semester of their admission. An academic advisor will consult with students to develop a Plan of Study. Students may choose **Plan I** (Thesis), **Plan II** (MS Project), or **Plan III** (Course Only). Both Plans I and II require successful defense of thesis or project in student's graduating semester.

- **Plan I-Thesis:** Students take 24 hours of graduate course work, and additionally write and defend a thesis, which counts for 6 hours of graduate thesis work. In this plan students will take a minimum of three "category A" courses, a minimum of four "category B" courses, and six hours of MS thesis.
- **Plan II-MS Project:** Students take 27 hours of graduate course work, and additionally write and defend a MS project report, which counts for 3 hours of graduate MS project work. In this plan, students will take four "category A" courses, a minimum of four "category B" courses, and three hours of MS project.
- **Plan III-Course Only:** Students must take 30 hours of graduate course work and, additionally, complete the final assessment during the student's graduating semester. In this plan, students will take four "category A" courses and a minimum of four "category B" courses. One of the "category B" courses must be from a designated list of courses that will satisfy a final MS course project.

Students are allowed a maximum of 3 credit hours of CS Independent Study (except in Plan III, course-only option).

Students may only take graduate engineering or graduate mathematics courses that are offered toward an MS degree in a degree-granting department, while at least 21 hours must be CS. Students must receive prior approval from the CSE graduate committee before taking any such courses. For example, courses offered through Continuing Education are not counted toward an MS degree in Computer Science.

The only exception for a student to take a graduate course from any other department is when the course satisfies all of the following conditions:

1. It appears in a graduate program.
2. It is taken instead of 3 hours of CS Independent Study.
3. It is approved by the CSE Graduate Committee.

No more than 6 credit hours may be in the form of online courses.

Cybersecurity and Defense Graduate Certificate

Introduction

This certificate is designed for working professionals in the field of computer science, network and/or security operations. Students are highly recommended to have a background in Computer Science, but will be individually evaluated during the application process. It consists of graduate-level courses in cybersecurity, operating systems, and computer networks or cloud computing. The certificate program in Cyber Security and Defense will prepare Computer Science professionals to identify, analyze, and mitigate technical cybersecurity related vulnerabilities, exploits and attacks against network and critical cyber infrastructure. The coursework emphasizes practical technical skills, analysis and research focused on current cybersecurity issues.

Certificate Objectives

With the advent of greater network, application, and infrastructure connectivity there are more advanced methods of cyber-attack. This certificate program focuses on both the technical and analytical aspects of advanced cybersecurity and defense. Graduates of this certificate program will learn how to mitigate known cyber-related attacks against multiple network and infrastructure devices. Graduates will also learn how to design secure solutions, analyze new cyber-attacks and provide solutions that balance risk, security, privacy, cost, and operations. Each course in this certificate program provides project-based opportunities to extend technical skills in programming, network, operating system, infrastructure design and analysis as well as understanding prevention of cybersecurity breaches and incidents

Certificate Eligibility

A BS or equivalent in Computer Science is ideal. Applicants with BS degrees other than computer science will be individually evaluated for adequate knowledge in programming, algorithms, and system design and may be assigned additional courses to take as part of the certificate program to address deficiencies in their background.

Students currently in BS-CS degree or in CS Scholars (Dual BS-MS) program at CU Denver need to have completed the undergraduate Operating Systems & Computer Networks and the recommendation of their academic advisor

Program Requirements

Program Learning Outcomes

1. Demonstrate an in-depth understanding of cybersecurity principles and practices.
2. Identify and analyze various types of cyber and infrastructure threats and apply basic cybersecurity defense concepts to develop and assess defensive solutions against them.
3. Apply cybersecurity knowledge and skills to maintain operations in the presence of risks.
4. Understand the national needs in the area of cybersecurity and learn the necessary skills to advance their careers as practicing cybersecurity professionals.
5. Understand their professional responsibilities and make informed judgments in their cybersecurity practices based on legal and ethical principles.

Process to Attain Certificate Objectives

Students will need to complete a sequence of four separate graduate-level courses

Code	Title	Hours
CSCI 5742	Cybersecurity Programming and Analysis	3
CSCI 5743	Cyber and Infrastructure Defense	3
CSCI 5573	Operating Systems	3
CSCI 5765	Computer Networks	3
Total Hours		12

Students must take and pass each course with a grade of B- or better and earn a GPA of at least 3.0 to obtain the Cybersecurity and Defense Certificate.

Engineering and Applied Science, PhD

Introduction

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing (p. 181) and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering (p. 186)
- Computer Science and Engineering (p. 201)
- Electrical Engineering (p. 214)
- Mechanical Engineering (p. 227)

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to engineering.ucdenver.edu (<http://engineering.ucdenver.edu>) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering (p. 182). The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

Graduate School Policies and Procedures (p. 59) apply to this program.

Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found at engineering.ucdenver.edu/graduate-admissions.

Program Requirements

The minimum degree requirements consist of:

- 30 semester hours of course work in the primary and secondary areas of concentration
- 30 semester hours of research/dissertation credit
- Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination.
- Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.
- Program must be completed within eight years of the date the student begins the degree program.

NOTE: for students applying through the Department of Civil Engineering, students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to

the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Software Engineering Graduate Certificate

Introduction

This certificate is designed for working professionals, or computer science students beginning careers, in the fields of software engineering and software development. Students are highly encouraged to have a previous computer science or systems engineering degree. At the start of the certificate program students are expected to have a strong understanding of software development in terms of software construction, software coding and basic software design.

Certificate Objectives

- To provide working or career-oriented students with knowledge and practice of the applied skills needed to become successful software engineers.
- To provide working or career-oriented students with knowledge and understanding of the skills needed to successfully advance their careers as software engineers.

Program Requirements

Process to Attain Certificate Objectives

Students will complete a sequence of three separate graduate-level courses

Code	Title	Hours
CSCI 5010	Software Architecture	3
CSCI 5573 or CSCI 5593	Operating Systems Advanced Computer Architecture	3
CSCI 5011	Software Project Management Support	3
Total Hours		9

Students must take and pass each course to obtain the Software Engineering Certificate.

Electrical Engineering

Chair: Stephen D. Gedney

Program Manager: Annie Schweitzer Bennett

Administrative Assistant: Karla Flores

Office: North Classroom, 2615

Telephone: 303-315-7520

Website: engineering.ucdenver.edu/electrical (<http://engineering.ucdenver.edu/electrical/>)

Overview

Electrical Engineering Programs

Modern electrical engineering is a very broad and diverse field. Never before has there been such a challenge and opportunity for electrical engineering to serve mankind. Today's electrical engineers are involved in the development of technology, materials and products to improve the

quality of life. They are concerned with the generation and transmission of power, the control and utilization of natural and synthetic resources, the communication of data and information and the intelligent use of computers in consumer as well as industrial products and processes. Systems in electrical engineering range in size from microprocessors through megawatt energy conversion systems to global audio and video communication networks.

Mission Statement

We provide graduate programs and an ABET-accredited undergraduate program that are accessible to a diverse group of students—students of different racial and cultural backgrounds, full-time students as well as those who have considerable work and family commitments outside their academic learning and students with a wide variety of work experiences.

Graduate Program

The Department of Electrical Engineering offers graduate programs with the following areas of emphasis: communications and signal processing; controls and signal processing; microelectronics and VLSI; fields, waves and optics; computer engineering and embedded systems design; and energy and power systems. The department offers graduate programs leading to the degrees of master of science in electrical engineering (p. 222) and master of engineering (p. 222). In addition, the multidisciplinary engineering and applied science doctor of philosophy (p. 223) degree is available through the Department of Electrical Engineering.

Requirements for Admission

Additional admissions information, including links to the online application, is available on the college website.

The minimum requirements for “regular” admission to the master’s program are: BS in electrical engineering, or equivalent degree in math, physics or other engineering disciplines, from a reputable institution, with a GPA of at least 3.0, on a 4.0 scale. Satisfaction of minimum requirements does not guarantee admission: The grades obtained in the student’s area of concentration are important factors in the consideration, and so are possible multiple repetitions of fundamental courses. Students who do not meet the requirements for direct admission to the program may be admitted “conditionally”: that is, they may be required to take or repeat certain undergraduate courses before their admission to the program is official.

For those undergraduate students with degrees in science and non-electrical engineering wishing to pursue graduate study in the electrical engineering department, there is no restriction or constraint in being admitted into the master of science in electrical engineering graduate program. However, they must fulfill any prerequisite course requirements assigned to any graduate course in the department. Students with an undergraduate degree in areas other than electrical engineering must receive approval from their graduate advisor before registering for a class in electrical engineering. All students must plan a program of study in consultation with their departmental advisor(s), during the first semester of study, and submit for approval to the department.

Applicants must submit evidence of adequate preparation for graduate study by either

1. submitting official GRE scores, or
2. documenting an earned bachelor’s degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body,

or an earned master’s degree with a GPA of 3.50 or higher from an institution accredited by a U.S. accreditation body.

All applications must be submitted online (<https://graduateschool.ucdenver.edu/admissions/apply/>). Send all supporting application materials to the Graduate School at the following address:

Mailing Address:

Graduate School
Campus Box 163
P.O. Box 173364
Denver, CO 80217-3364

Courier Address (UPS, FEDEX, etc.):

Graduate School
1380 Lawrence Street, Suite 1251
Denver, CO 80204

For admissions questions, contact graduateadmissions@ucdenver.edu or 303-315-2179.

International Applicants

More information for international applicants is available through the Office of International Admissions (p. 44).

Programs

- Electrical Engineering, MEng (p. 222)
- Electrical Engineering, MS (p. 222)
- Engineering and Applied Science, PhD (p. 223)

Faculty

Professors

Hamid Fardi, PhD, University of Colorado Boulder
Stephen Gedney, PhD, University of Illinois at Urbana-Champaign
Mark Golkowski, PhD, Stanford University
Fernando Mancilla-David, PhD, University of Wisconsin at Madison
Miloje Radenkovic, PhD, University of Belgrade, Yugoslavia

Associate Professors

Dan Connors, PhD, University of Illinois Urbana-Champaign
Tim Chifong Lei, PhD, University of Michigan
Jaedo Park, PhD, The Pennsylvania State University

Assistant Professors

Vijay Harid, PhD, Stanford University
Chao Liu, PhD, Purdue University
Alireza Vahid, PhD, Cornell University

Senior Instructor:

Lary Speakman, BS, University of Colorado Denver

Electrical Engineering (ELEC) Courses

ELEC 5005 - IC Design (3 Credits)

Explores digital integrated circuit design including MOS processing steps, physical operation, building blocks of digital circuits, advanced nMOS, pMOS and CMOS circuit design, silicon VLSI technology and circuit and chip level. Spice and lay-out Editor are used. The physical relationship between circuit design and actual silicon layout and structure and technology are emphasized. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4005. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

ELEC 5025 - Device Electronics (3 Credits)

A course relating performance and limitations of solid state devices to their structures and technology. For both advanced circuit and device engineers. Semiconductor physics and technology, pn-junction and MOS devices used in modern integrated circuits. Prereq: ELEC 3225 and senior standing. Cross-listed with ELEC 4025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3225 Restriction: Senior standing

ELEC 5033 - Advanced Electromagnetic Fields (3 Credits)

A course focused on electromagnetic waves. Topics include: Poynting's power theorem, reflection and transmission of uniform plane waves in layered media, two-conductor transmission lines, rectangular wave guides, Smith Chart elements of radiation and antenna. Prereq: ELEC 3133 and permission of instructor for undergraduates. Cross-listed with ELEC 4133. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5133 - Electromagnetic Radiation and Antenna (3 Credits)

Solution of inhomogeneous wave equation. Radiation fields of elementary dipole, linear wire antenna, uniform and non-uniform linear arrays. Array synthesis. Farzone field patterns, directivity and beamwidth. Diffraction fields of aperture sources, horn antenna, conic surface reflector sources, lens antenna. Ray tracing methods. Transient-receive link. Selected Topics. Prereq: ELEC 4133, graduate standing and permission of instructor for undergraduates. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4133 or ELEC 5033

ELEC 5134 - Introduction to Microwave Circuit Design (3 Credits)

This course provides the basic principles of microwave circuit design, including transmission line theory, network parameters, signal flow graphs, design of high frequency matching networks, filters, hybrids and couplers using waveguide elements, high frequency amplifier and mixer design. Prereq: ELEC 3133. Cross-listed with ELEC 4134. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 or graduate standing

ELEC 5164 - Electric Drive Systems (3 Credits)

Covers power electronics drives for rotating electric machinery. Topics include power electronics elements for drives, load characteristics, dynamic modeling of AC machines, fundamental control algorithms, simulation and practical commercial drives. Prereq: ELEC 3164. Cross-listed with ELEC 4164. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5170 - Electric Drives Systems Laboratory (1 Credit)

Offers hands-on experience on rotating electric machine drive simulations and commercial systems. Sessions include pulse-width modulation (PWM) inverter, induction, DC, and synchronous machine drives. Matlab/Simulink and a commercial inverter will be utilized. Cross-listed with ELEC 4170. Prereq: ELEC 4164 or equivalent. Max Hours: 1 Credit.

Grading Basis: Letter Grade

ELEC 5174 - Power Electronic Systems (3 Credits)

Topics to be covered include: power electronics fundamentals and applications in power systems; uncontrolled, semi-controlled and fully controlled power semiconductors; converters design and control. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4174. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3164 or Graduate Standing

ELEC 5184 - Power Systems Analysis (3 Credits)

Topics to be covered include: complex power; per-unit quantities; modeling of generators, transformers and transmission lines; power flow problem; economic dispatch; faults and sequence networks; and an introduction to power system protection and dynamics. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4184. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3164 or Graduate Standing

ELEC 5194 - Power Systems Operation and Control (3 Credits)

This course introduces the student to various operational strategies the power industry uses today to operate the power system. Topics to be covered include: economic dispatch, unit commitment, optimal power flow (linear and nonlinear), transmission congestion, control areas, state estimation, and an introduction to power markets. Prereq: ELEC 4184 or ELEC 5184 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184 or ELEC 5184 or graduate standing.

ELEC 5210 - Optimization Methods in Engineering (3 Credits)

Unconstrained optimization, gradient methods, conjugate direction methods, data fitting and function estimation. Applications in control, system identification and radar systems. Optimization over a convex set, LMS algorithms in adaptive systems, convergence properties. Nonlinear programming, Lagrange multipliers, projection algorithms, games and minimax theorem, application to H infinity control, communication and signal processing. Prereq: MATH 3191 and 3200/3195. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MATH 3191 and (3200 or 3195)

ELEC 5220 - Methods of Engineering Analysis (3 Credits)

Real sequences and infinite series, convergence of the parameter estimates in self-tuning control. Uniform convergence and application to adaptive FIR filters. Improper integrals, application in filtering, prediction and communication. Analytic functions, Hardy spaces, maximum modulus theorem. Argument principle and Nyquist stability criteria. Calculus of residues, LQG problem. Conformal mappings, Nevelinna-Pick problem. Prereq: MATH 3191 and 3200/3195, graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (MATH 3191 and 3200) or MATH 3195 or Graduate Standing

ELEC 5230 - Advanced Linear Systems (3 Credits)

Mathematical description of both continuous and discrete-time systems; vector, normed and inner-product spaces; state-space, impulse response and transfer function descriptions; state-transition response matrices; eigenvalues and eigenfunctions; controllability; canonical form; state feedback; observers; realization theory. Prereq: MATH 3191, MATH 3200/3195 and permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (MATH 3191 and 3200) or MATH 3195 or Graduate Standing

ELEC 5248 - Digital Communication Systems (3 Credits)

Introduces digital communication systems covering elements of information theory; mathematical representation of signals and systems; modulation and demodulation for the additive Gaussian noise channel; Performance analysis of various transmission formats; synchronization; coded waveforms; decoding algorithms; and other related topics. Prereq: ELEC 3316, 3817; recommended ELEC 4247. Cross-listed with ELEC 4248. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5249 - Space Communications Systems (3 Credits)

Presents the art of space communications system design around the framework of the link budget and the essential analysis tool of the radio system designer. The budget is examined from theoretical and practical viewpoints. Pointers and motivation for further study in each of the related engineering disciplines are provided. Topics to be examined include satellite orbits, propagation, antennas, noise, modulation, coding and hardware or software. Prereq: Permission of instructor and graduate standing. Cross-listed with ELEC 4249. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5250 - Information Theory (3 Credits)

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Prereq: ELEC 3817 or CSCI 4535 or MATH 3800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3817 OR CSCI 4535 OR MATH 3800 OR Graduate Standing

ELEC 5252 - Computer Communication Networks (3 Credits)

Comprehensive study of issues arising in modern computer-communication networks, both wire-line and wireless, carrying traffics with heterogeneous characteristics. A conceptual and analytical approach to the design of network protocols in harmony with the appropriate modeling of the traffic and network environments. Issues covered include routing, transmission, performance monitoring, as well as and network management in ATM multi-media networks. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5276 - Digital Control Systems (3 Credits)

Analysis and design of discrete-time systems, as occurs when a digital computer is used to control physical systems. Topics include difference equations, Z-transform, sampled-data system modeling, sampling, discrete equivalents, stability, and discrete control design by root locus, direct design, frequency-response, and state space. Prereq: ELEC 3316, ELEC 3817, and graduate standing. Cross-listed with ELEC 4276.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: ELEC 4136 or Graduate Standing

ELEC 5294 - Advanced Power Electronic Systems (3 Credits)

The course focuses on the design, modeling, modulation, control and simulation of three-phase two-level voltage sourced inverters with emphasis on applications. Student will also be introduced to advanced topologies including diode clamped multilevel inverters, modular multilevel inverters and matrix converters. Prereq: ELEC 4174 or ELEC 5174. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4174 or 5174

ELEC 5333 - Introduction to Computational Electromagnetics (3 Credits)

An intro to computational electromagnetics based on the Finite Difference Time-Domain (FDTD) covering, finite difference methods, the Yee algorithm, numerical error, stability, boundary conditions, source excitations, hands-on programming experience and application of FDTD to real problems. Prereq: ELEC 3133 or grad standing. Cross-listed with ELEC 4333. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 or graduate standing

ELEC 5334 - Advanced Computational Electromagnetics (3 Credits)

This course on advanced computational electromagnetics covers Green's theorems and identities, vector potential theory, equivalence principles, numerical linear algebra, numerical integration, method of weighted residuals, integral equation methods, method of moments, and Prereq: ELEC 4133 or ELEC 5133 or grad standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4133 or ELEC 5133 or grad standing

ELEC 5373 - Optical Engineering (3 Credits)

This course introduces some of the most important concepts in optical engineering and prepares students a solid foundation to apply them to applications in the industry and academic research. Prereq: ELEC 3133. Cross-listed with ELEC 4373. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 Restriction: Restricted to students within the College of Engineering, Design and Computing

ELEC 5375 - Engineering Neuroscience (3 Credits)

In this course, mathematical models and data processing strategies will be introduced as well as other cutting-edge research techniques to help students understand how these techniques can be applied to solve modern neuroscience problems. Prereq: ELEC 3316 or graduate standing. Cross-listed with ELEC 4735 and NRSC 7674 (Anschutz Medical Campus course). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3316 or Graduate Standing

ELEC 5423 - Radio Frequency Laboratory (1 Credit)

Projects involve modern RF analyzers, waveguide devices, time-domain techniques, characterization of devices, signal propagation and scattering, harmonic mixing, and radio frequency identification. Students will gain experience using MATLAB for data acquisition and processing. Graduate students will explore projects in greater detail. Cross-listed with ELEC 4423. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

ELEC 5433 - Fundamentals and Applications of Plasmas (3 Credits)

This course provides an introduction to plasmas, also known as the fourth state of matter, in nature and industry. Topics covered include single particle motions, plasma kinetic and fluid theory, cold and warm plasma models and interaction of electromagnetic waves with plasmas. Applications ranging from space sciences to medicine are explored. Prereq: ELEC 3133 for undergraduate students or permission of the instructor. No prerequisite for CEDC graduate students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 + Engineering undergraduates or Prereq: Graduate Engineering

Typically Offered: Fall, Spring.

ELEC 5436 - Nonlinear Control Systems I (3 Credits)

Analysis and synthesis of nonlinear feedback control systems. Linearization's and stability in the small, equivalent linearization and the describing function. The dual input describing function. Stability in the large and the second method of Lyapunov. Stability of time-varying systems. Popov's method and extensions. Prereq: ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276 or Graduate Standing

ELEC 5444 - Power System Laboratory (1 Credit)

This lab introduces the student to modern computational tools used in power system analysis. Algorithms to solve the "power flow problem", the "economic dispatch problem", and the "optimal power flow problem" are discussed and implemented in the Matlab-Simulink mathematical analysis software package. Coreq: ELEC 4184. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: ELEC 4184.

ELEC 5446 - Introduction to Modern Control Theory (3 Credits)

State space representation of dynamic systems. Canonical forms. Frequency domain analysis. Controllability and observability. Design by statespace methods: pole-placement, linear observers, separation principle, robustness. Linear, quadratic optimum control. Prereq: ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276.

ELEC 5455 - Computer Methods for Device Electronics (3 Credits)

Numerical analysis of PN junctions, Bipolar transistors, GAAS MESFETS, and MOSFETS. Numerical solution of discrete-form equations. Finite-difference method for semiconductor devices. Two-dimensional models: DC, transient, and small signal numerical analysis. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

ELEC 5456 - Sampled Data and Digital Control Systems (3 Credits)

Elements of sampling theory. Overview of design approaches via transform methods. Analysis and design in state space. Optimal control systems. Emphasis is placed on computer-aided design projects. Prereq: ELEC 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4276 or Graduate Standing

ELEC 5466 - Adaptive Control System Design (3 Credits)

Basic concepts in adaptive feedback control. Overview of application areas. Stability of non-linear systems and hyperstability approach to the design of adaptive controllers. Passivity concept and Liapunov stability. Design of model reference adaptive systems, self-tuning regulators, stochastic adaptive, and dual control systems. Computer-based design applications. Emphasis is placed on design projects. Prereq: ELEC 4136 or 4276. Cross-listed with ELEC 4466. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276.

ELEC 5474 - Power Electronics Laboratory (1 Credit)

The power electronics laboratory introduces students to seven fundamental switchmode power conversion topologies, along with voltage and current feedback control, assembled on a reconfigurable power pole circuit board with external power supplies and laboratory. Cross-listed with ELEC 4474. Max Hours: 1 Credit.

Grading Basis: Letter Grade

ELEC 5476 - Optimal Control Systems (3 Credits)

Liapunov stability and quadratic optimal control problems. The minimum principle and the Pontryagin maximum principle. Variational calculus and Hamilton-Jacoby-Bellman equation. The separation principle of LQG control. Combined optimal state estimation and control. Differential and difference Riccati equations. Tracking and disturbance rejection. Computer-aided design applications. Prereq: ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276 or Graduate Standing

ELEC 5486 - Modeling and System Identification (3 Credits)

Linear time-invariant and time-varying models. Nonlinear state space models. Non-parametric methods. Parameter estimation methods. Convergence and consistency. Computational methods in estimation. Recursive estimation methods. Experiment design and choice of identification criterion. Model structure selection and model validation. Prereq: ELEC 3817 or MATH 3800, and ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Pre-req: (ELEC 3817 or MATH 3800) AND (ELEC 4136 or 4276) OR Graduate Standing

ELEC 5496 - Robust Control (3 Credits)

Background mathematics: function spaces and operators, and factorization theory. Stability theory: stability and stabilizability parameterization, closed-loop transfer matrices. Model-Matching Theory: solution existence, SISO Design, the Nehari problem. Performance bounds. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5501 - Microprocessor-Based Design (3 Credits)

Covers advanced treatment of embedded system design using microprocessors. Analog input circuitry is interfaced to a microprocessor, and a PC board layout is created to develop a complete system design. Software/Operating System is implemented for realtime I/O. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4501. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5511 - Hardware-Software Interface (3 Credits)

Computer engineering methods in hardware and software design applied to problems drawn from the mini- and micro-computer systems field. Hardware and software techniques for the design of combined hardware or software are developed. Interface and real-time programming techniques are considered. Graduate level requires additional projects and homework. Prereq: ELEC 3520. Cross-listed with ELEC 4511. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3520.

ELEC 5521 - Design and Test of Digital Systems (3 Credits)

Application of hardware description languages to the design, synthesis, analysis, and testing of digital and computer systems; modeling and simulation constructs; modern hardware description languages, including VHDL, logic and behavioral synthesis; rapid-prototyping; FPGA and standard-cell ASIC design; design for testability; and electronic design automation. Prereq: ELEC 3651 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3651 or Graduate Standing

ELEC 5522 - VLSI Systems (3 Credits)

Examines the design of very large-scale integrated (VLSI) systems from the logic to physical levels, including MOS transistor design, CMOS fabrication and design rules, device and wafer processing, inverter and complex gate design, mask level layout, VLSI system components and architectures, algorithms for VLSI computer-aided design, and testability. Prereq: ELEC 3215 and 3651 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Pre-req: (ELEC 3215 and 3651) or Graduate Standing

ELEC 5551 - Pattern Recognition (3 Credits)

Pattern recognition techniques from image processing and artificial intelligence are explored. Topics include neural networks, morphological processing, wavelets, fractals, and basic image understanding. Prereq: ELEC 3316 and 3651. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3651) or Graduate Standing

ELEC 5555 - VLSI Circuit Simulation (3 Credits)

Computer methods for large integrated circuits. Theory and practice of VLSI circuit simulation. Nodal formulations of networks. Computer generation of sensitivities. Modeling active devices. DC solution of nonlinear networks. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5617 - Random Processes for Engineers (3 Credits)

Probability, sequences of random variables, specification of stochastic processes, stationarity, correlation functions and spectral densities, linear mean-square estimation, central limit theorems, law of large numbers, non-stationary random processes, stochastic differential equations and Karhunen-Loeve expansion, Kalman filtering. Prereq: ELEC 3316 and ELEC 3817 and permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5627 - Stochastic Point Processes (3 Credits)

Presents modeling physical phenomena characterized by highly localized events distributed randomly in a continuum. Applications include optical communications, queuing theory, decision theory, nuclear medicine and electron microscopy. Topics include Poisson counting processes and its generalizations; stochastic differential equations used in filtering; martingales and Brownian motion. Prereq: ELEC 3817 or ELEC 5617. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3817 or 5617

ELEC 5637 - Digital Signal Processing (3 Credits)

Discrete-time signals and systems in the time and frequency domain. Digital filter structures, design of FIR filters by windowing, optimum approximations of FIR filters. Design of digital IIR filters from continuous time domain. Computer-aided design of digital filters. The discrete Fourier transform and DSP algorithm implementation. Analysis of finite word length effects. Application of digital signal processing. Prereq: ELEC 3316 and 3817. Cross-listed with ELEC 4637. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5638 - Digital Image Processing (3 Credits)

Basics of two-dimensional (2-D) systems theory, including 2-D Fourier transform, Z-transform, and difference equations. Design of 2-D filters for image processing applications. Image transforms, including the 2-D FFT, cosine, Hadamard and KL. Image enhancement and restoration techniques. Method of image coding and compression. Prereq: ELEC 3133, 3215, 3225, 3316, 3817 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133, 3215, 3225, 3316, 3817 or graduate standing

ELEC 5644 - Introduction to Biomedical Imaging (3 Credits)

An important component of the recent expansion in biomedical engineering is the area of biomedical imaging. This ELEC 4644/5644 course is an introduction to biomedical imaging systems, not only covering the fundamentals of imaging physics but also the applications of four primary biomedical imaging modalities: X-Ray Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine (i.e. PET, SPECT), and Ultrasound Imaging. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4644. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5647 - Adaptive Signal Processing (3 Credits)

Optimal filtering and identification of signal processing models. Martingales and analysis of recursive estimation algorithms. LMS and RLS adaptive filters. Stability, convergence and robustness of adaptive algorithms. Adaptive noise cancellation, time delay estimation and blind equalization. Adaptive differential pulse code modulation, adaptive prediction, adaptive Kalman Filters. Applications and implementation of adaptive algorithms. Prereq: ELEC 5637. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5637

ELEC 5648 - Blind Signal Processing (3 Credits)

Introduction to gradient optimization methods. Introduction to adaptive filtering. Principal component analysis and whitening. Robust and adaptive PCA. Blind SOS parameter estimation and deconvolution. Fundamentals of independent component analysis. Blind equalization of SIMO and MIMO systems. ICA by maximization of nongaussianity. ICA by MLE and minimization of mutual information. Applications and practical considerations. Prereq: Graduate standing. Cross-listed with ELEC 6648. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

ELEC 5657 - Detection and Estimation Theory (3 Credits)

Introduces detection and extraction methods used in signal processing, including decision theory; detection of known and random signals; optimum receiver design; estimation theory; Wiener filtering; Kalman-Bucy filtering; and applications to communication systems. Prereq: ELEC 5617. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5617

ELEC 5667 - Wavelet Theory and Applications (3 Credits)

Topics include: fundamentals of signal decomposition; theory of filter banks; multi-resolution analysis and fast wavelet transforms; applications image and video image and video compression; and denoising and feature detection. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5678 - Quantum Computing (3 Credits)

The course teaches students the principles, the algorithms and the programming methods of quantum computing, and also discusses the associated physics and mathematics background required. Other related topics such as quantum communication and quantum entanglement will also be discussed. Prereq: PHYS 2331 and ELEC 3817 with a C- or better. Cross-listed with ELEC 4678. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PHYS 2331 with a C- or better, and ELEC 3817 with a C- or better.

ELEC 5687 - Optical Communication Systems (3 Credits)

System aspects of optical communication system design. Basic principles of sources, channels, detectors, counting statistics, amplifiers, and coding with regard to the performance limitations they place on the communication system. Prereq: ELEC 3133. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 Restriction: Restricted to students within the College of Engineering, Design and Computing

ELEC 5688 - Introduction to Nondestructive Testing (3 Credits)

A basic, broad understanding of the principles of nondestructive testing and evaluation is provided. The main objective of this course is to attract students to NDT fields and eventually help address the increasing needs of NDT engineers and technicians. Interaction and collaboration with local NDT industries will also be emphasized. As an introductory course, a broad interdisciplinary knowledge of NDT will be covered in the following sub-areas: Visual, Penetrant, Magnetic Particle, Eddy Current, Microwave, Ultrasonic, and Radiography. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4688. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

ELEC 5697 - Optical and Spatial Information Processing (3 Credits)

Processing of two- and three-dimensional spatial information. The scalar diffraction theory necessary to describe the information-bearing wave-front. Wave-front recording, modulations, and reconstruction. Holography, Fourier transform properties of lenses, two-dimensional convolution and correlation, pattern recognition, and optical information processing. Prereq: ELEC 3316. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3316 or Graduate Standing

ELEC 5710 - Advanced Electric Drive Systems (3 Credits)

Covers advanced theory and implementation techniques for rotating electric machinery drives. Topics include field oriented control theory, detailed dynamic modeling of induction machine/drive system, advanced control algorithms and controller design. Prereq: ELEC 4164/5164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5714 - Energy Systems Analysis (3 Credits)

Transmission line constants, including details of GMD methods, skin effect. Analysis of balanced and unbalanced line using distributed parameters, energy flow from circle diagram approach, traveling-wave phenomena, corona, power cables and fundamentals of DC transmission. Prereq: ELEC 4184. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184

ELEC 5720 - Practical Electric Drive Systems (3 Credits)

Covers practical control theory and implementation techniques for electric machine drives for rotating electric machinery using high-performance hardware and software. Topics include machine theory review, power converter, control theory, controller design and actual implementation of an induction machine drive using up-to-date microcontroller hardware and software. Prereq: ELEC 2520, ELEC 4164/5164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5723 - High Performance Computer Architecture (3 Credits)

High Performance Computer Architecture covers the design of advanced computing systems. In particular, the course includes the design of modern microprocessors, characteristics of the memory hierarchy, and issues involved in multithreading and multicore architectures. Prereq: ELEC 3651 Digital Hardware Design. Cross-listed with ELEC 4723. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5725 - Advanced Electric Machinery (3 Credits)

Covers theoretical principles and techniques of electric machine analysis focusing on rotating machinery. Topics include various machine definitions, properties and analysis, software tools, and examples. Prereq: ELEC 3164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5727 - Computer Vision & Image Processing Acceleration (3 Credits)

Real-time constraints on computer-vision and image processing applications have motivated numerous explorations of multicore architectures to provide more efficiency through hardware parallelism and acceleration. This course undertakes the study of image processing and computer vision algorithms in the context of parallel hardware. Prereq: ELEC 3520. Cross-listed with ELEC 4727. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3520.

ELEC 5755 - Renewable Energy Systems (3 Credits)

This course focuses on the modeling, analysis and control of grid-connected wind and photovoltaic energy systems. Prereq: permission of instructor. Cross-listed with ELEC 4755. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5764 - Power Distribution Systems (3 Credits)

Use of per-unit methods to find transient voltage behavior of industrial power systems resulting from motor starting, spotwelders and similar stimuli. System and device responses due to series and shunt capacitors and problems of subharmonics and over-excitation on induction motors. Design of power distribution systems. Prereq: ELEC 4184. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184

ELEC 5774 - Power Systems Dynamics and Protection (3 Credits)

Topics to be covered include: power system dynamic fundamentals, various stability problems, such as angle, frequency and voltage stability; protection of power systems apparatus and protective relays coordination. Prereq: ELEC 4184/5184 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184 or Graduate Standing

ELEC 5800 - Special Topics (1-3 Credits)

Intermediate courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details.

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5840 - Independent Study: ELEC (1-6 Credits)

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ELEC 5939 - Internship Master Student (1-3 Credits)

Student will outline internship tasks every 2-3 weeks in a progress report. Reports will include the details of exposure to electrical/computer engineering concepts. Each concept will be described with respect to CU Denver Electrical Engineering degree program. Courses that were taken pre-internship that prepared student for successful understanding for the task requirements. In addition, preparations that would be help, will also be mentioned. Engineering training in design and software tools related to internship tasks will be clearly described. Final semester report will describe all experiences and include recommendations on how students might prepare to be successful for other common tasks. Requisite: Graduate students must have completed 6 credit hours with a cumulative GPA of 3.0. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Graduate students must have completed 6 credit hours with a cumulative GPA of 3.0.

ELEC 5980 - Statistical Quality Control (3 Credits)

Introduces statistical methods of quality control. Statistical process control, process capability, statistical design of experiments and total quality management. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 6000 - Statistical Signal Processing (3 Credits)

The objective of this course is to present a systematic coverage of statistical signal processing methods which are fundamental for processing, identifying and classifying stochastically (randomly) generated data sequences. Emphasis will be given to methods which resist data outliers. Important applications include communications and biological systems. Prereq: ELEC 5617 or consent of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5617

ELEC 6800 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 6950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

ELEC 6960 - Master's Report (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

ELEC 7800 - Special Topics (1-3 Credits)

Courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7801 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7802 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7803 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7804 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7805 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7806 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7807 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7808 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7809 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7840 - Independent Study: ELEC (1-6 Credits)

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ELEC 8990 - Doctoral Dissertation (1-10 Credits)

Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Electrical Engineering, MEng

Introduction

The master of engineering in electrical engineering at CU Denver is a broad-based, interdisciplinary degree designed especially for students who want to further their education in electrical engineering in areas such as engineering administration, where coursework in business management would logically supplement engineering studies.

Areas of concentration

Graduate programs in electrical engineering offer the following areas of concentration:

- Communications and signal processing
- Controls and signal processing
- Microelectronics and VLSI
- Fields, waves and optics
- Computer engineering and embedded system design
- Energy and power systems

Program Requirements

A minimum of 30 credit semester hour of academic work acceptable to the Advisory Committee (within the rules established by the College of Engineering, Design and Computing) will be required for the Master of Engineering degree. In compliance with the Graduate School Policies and Procedures, the minimum grade required for a unit to count toward the 30 semester hours is a B minus (2.7).

To couple this degree with electrical engineering, at least 15 of these hours must be 5000 level or above in electrical engineering courses, and must be taken in the CU Denver Department of Electrical Engineering. As many as 12 hours can be taken outside of electrical engineering. Students must also complete a 3-credit-hour master of engineering project. The project should cover some area of creative investigation performed by the student and may relate directly to the student's

professional work. The project must be defended orally before the Advisory Committee.

Contact the Department of Electrical Engineering (electrical@ucdenver.edu) for more information.

Electrical Engineering, MS

Introduction

The master of science in electrical engineering at CU Denver is geared toward electrical engineers who are interested in advancing their careers or move into leadership positions. There is no specific curriculum for the master of science degree except for a breadth requirement, which is a combination of electrical engineering courses chosen by the student.

Areas of concentration

Graduate programs in electrical engineering offer the following areas of concentration:

- Communications and signal processing
- Controls and signal processing
- Microelectronics and VLSI
- Fields, waves and optics
- Computer engineering and embedded system design
- Energy and power systems

Program Requirements

To fulfill the requirements for the master of science in electrical engineering, the Electrical Engineering Department requires that, within a seven-year period, the candidate completes an approved program in one of two options:

1. a **thesis option** consisting of at least 30 semester hours, including 6 credit hours of MS thesis, or
2. a **course-only option** consisting of at least 30 semester hours.

It is also required the candidate maintain a grade point average of 3.0 or higher. In compliance with the Graduate School rules, the *minimum* grade required for a unit to count toward the required semester hours is B minus (2.7).

The student must take at least four 3-hour graduate courses (12 credit hours) in the primary area of concentration, and at least two 3-hour graduate courses (6 credit hours) in the secondary area. All of these courses must be taken through the CU Denver Department of Electrical Engineering. The remaining courses may be taken from any area of concentration. A student may also take one 3-credit independent study course with a graduate faculty member of the CU Denver electrical engineering department.

At least 21 graduate credit hours must be taken from the CU Denver Department of Electrical Engineering. At the discretion of the graduate committee, a maximum of nine graduate credits may be transferred from other programs.

Contact the Department of Electrical Engineering (electrical@ucdenver.edu) for more information.

Engineering and Applied Science, PhD

Introduction

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing (p. 181) and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering (p. 186)
- Computer Science and Engineering (p. 201)
- Electrical Engineering (p. 214)
- Mechanical Engineering (p. 227)

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to engineering.ucdenver.edu (<http://engineering.ucdenver.edu>) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering (p. 182). The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

Graduate School Policies and Procedures (p. 59) apply to this program.

Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found at engineering.ucdenver.edu/graduate-admissions.

Program Requirements

The minimum degree requirements consist of:

- 30 semester hours of course work in the primary and secondary areas of concentration
- 30 semester hours of research/dissertation credit
- Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination.
- Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.
- Program must be completed within eight years of the date the student begins the degree program.

NOTE: for students applying through the Department of Civil Engineering, students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to

the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Engineering and Applied Science, PhD

Introduction

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Program Requirements

The minimum degree requirements consist of:

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NOTE: for students applying through the Department of Civil Engineering, students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Inworks

Director: Kristin Wood, PhD

Denver Office: CU Building, 1st Floor; 1250 14th Street; Denver, CO 80202

Anschutz Office: CU Strauss Library; 12950 E. Montview Blvd.; Aurora, CO 80045

Telephone: 303-315-0047 (Denver), 303-724-4120 (Anschutz)

Website: inworks.ucdenver.edu (<https://inworks.ucdenver.edu>)

Overview

Inworks is an innovation initiative of the University of Colorado Denver | Anschutz Medical Campus, based in the College of Engineering, Design and Computing. As a home for creators, thinkers, designers, and makers, we're a collaborative community of learners and leaders committed to solving humanity's most pressing problems. In our two state-of-the-art prototyping labs, we draw on expertise from many disciplines to synthesize unique solutions to real-world challenges. At Inworks, we learn and teach through making, but we don't just make things – we make them matter.

Our mission is to impart skills and habits of minds that allow people to collaboratively create impactful solutions to human problems.

When you take an Inworks course, the process of innovation is demystified. You'll learn the human-centered design process; it will guide you as you move from problem to prototype. In our prototyping labs you can access technologies to 3D print, solder a circuit, or grow a biomaterial. But don't expect to do it alone, because Inworks is a space that catalyzes meaningful collaboration. Students of all majors will find a place here.

Inworks offers a graduate certificate in Human-Centered Design and Innovation.

Programs

- Human-Centered Design and Innovation Graduate Certificate (p. 227)

InWorks (INWKS)

IWKS 5100 - Human-Centered Design, Innovation and Prototyping (3 Credits)

Offers a graduate-level introduction to collaborative interdisciplinary design and innovation from a human perspective, as well as introducing key theoretical and computational foundations of innovation. Using the wide array of Inworks prototyping facilities, teams of students will design and implement human-oriented projects of increasing scale and complexity, in the process acquiring essential innovation and problem-solving skills. Prerequisite: None. No previous design or prototyping experience is expected or required. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5120 - IoT: The Internet of Things (3 Credits)

In a world where everything is connected to everything else, how does that work? This course introduces techniques for (1) designing systems that can sense the environment and respond to humans in meaningful ways and (2) creating networks of physical objects that collect and exchange data. Such systems might include wearable sensors, interactive art, and Internet-connected home devices. Working individually and in teams, students will develop projects using Inworks' materials, devices, and fabrication tools. The course involves considerable prototyping and software development but requires only introductory programming and prototyping experience. Suggested Background: IWKS 5100 & some computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5150 - Advanced Human-Centered Design and Prototyping (3 Credits)

Graduate version of IWKS 4100. An advanced exploration of design thinking and the user-centered design paradigm from a broad range of perspectives, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Using a team-based, project-oriented approach, students will develop advanced expertise in the design, development, and critique of solutions to important human problems. The course will make full use of Inworks' prototyping facilities. Suggested Background: IWKS 5100 & 5170. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5170 - 3D Design, Computation and Prototyping (3 Credits)

Introduces the design and computer-controlled fabrication of three-dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router/mill) processes. Increasingly complex projects throughout the semester using various CAD/CAM software tools will explore design strategies for digital fabrication. Restriction: Restricted to students with graduate standing. Cross-listed with IWKS 3100 and ARCH 3706. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5180 - Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping (1-3 Credits)

Provides weekly speakers, workshops and other experiences that educate and enrich across the design, innovation and prototyping landscape. Students may choose to participate in any five (for one credit), ten (for two credits) or fifteen (for three credits) activities. Each week, participating students will attend the scheduled activity, and then create a meaningful response that reflects the impact of that activity on their thinking or practice. Prerequisites: None. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

IWKS 5200 - Data Science for Innovators (3 Credits)

Graduate version of IWKS 3200. Introduces techniques for capturing, processing, visualizing, and making meaning out of large datasets. With the exponential growth and decreasing cost of data collection tools such as genome sequencing, social media, crowd sourced data, mobile phone apps, remote sensors, and data from other publically available sources, innovators are able to harness a rich array of data in their designs. This course will introduce the fundamentals of working with online data and large data sets, introduce widely used data analysis and visualization tools, and culminate in a cumulative project that incorporates data in a significant way. Suggested Background: IWKS 5350 or similar computing experience. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5300 - NAND to Tetris: Foundations of Computer Systems (3 Credits)

Graduate version of IWKS 3300. Introduces the principles of computer systems that underlie the global information age. Starting from first principles, students gradually construct a simple hardware platform and a modern software hierarchy, yielding a working basic yet powerful computer system. Suggested Background: IWKS 2300 or similar computing experience. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5350 - Computational Foundations of Innovation (3 Credits)

Graduate version of IWKS 2300. Introduces the technological underpinnings of modern society, introducing the fundamental principles of computing. Students create realistic artifacts, and imbue those artifacts with interesting behavior by writing computer programs in on-line virtual world similar to Second Life and for simple Arduino-connected devices. In-class and in-world discussions and readings introduce important computing ideas and concepts. Completion of this course will prepare students for more advanced IWKS graduate courses that require knowledge of computing principles and practices. Prerequisites: None. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5400 - Game Design and Development I (3 Credits)

Graduate version of IWKS 3400. Introduces principles of computer game development, building on the rich interplay of computer science, graphics design, physics, music, and narrative. Students develop interactive 2D and 3D games and a final project. Substantial software development involved, but requires only introductory programming experience. Suggested Background: IWKS 2300 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5450 - Game Design and Development II (3 Credits)

Graduate version of IWKS 4450. Continuation of IWKS 5400, with increased emphasis on more advanced techniques including 3D rendering; multimodal music, complex narrative, animation, non-player AI, and advanced 3D techniques including diffuse, ambient, specular, and emissive lighting; vertex, pixel and geometry shaders; shadows; terrain building; reflective and refractive lighting; bump, parallax, and parallax occlusion mapping; Phong and Gouraud shading; "cel" shading; ray tracing; bloom; and high dynamic range lighting. Suggested Background: IWKS 5400 or similar experience in game development. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5500 - Bio-Design and Innovation (3 Credits)

Introduces the biodesign innovation process, which involves identifying important human needs and inventing meaningful solutions to address them. The course examines how biotechnology and bio-inspired innovation improve the form and function of our design world through innovative materials and novel approaches to developing buildings, food, medicine, infrastructure and more. Readings and in-class debates will raise critical issues in contemporary bioethics. For their final projects, students will choose to create and prototype a speculative biodesign concept, or work in the bio lab on the development of a real-world biodesign solution of their choosing. Suggested Background: IWKS 2100 & 3100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5520 - Design for Healthful Human Longevity (3 Credits)

Graduate version of IWKS 4520. Introduces contemporary studies, therapies, theories, and research on aging, age related disease, and innovations for longer healthier human lives. Guest lecturers, seminar discussions, readings and discussions will inform student projects that address challenges to prolonged, healthy, disease-free lives. Suggested Background: IWKS 5100 and 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5540 - Synthetic Biology for Innovators (3 Credits)

Graduate version of IWKS 3540. Introduces the fundamentals of synthetic biology for those who seek to use it as tool for innovation. Synthetic biology allows us to engineer new biological systems and redesign existing biological components by integrating aspects of biotechnology, evolutionary and molecular biology, systems biology, computer engineering, computational biology, and genetic engineering. Advancement in technological tools and techniques make this material accessible to motivated individuals from many disciplines, and no biology background is required. Culminates with a final team project focused on designing synthetic biology solutions that address human need. Suggested Background: None. No previous background in biology is required. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5550 - Innovation Law and Policy (3 Credits)

Graduate version of IWKS 3550. Introduces legal and regulatory foundations related to innovation, including intellectual property, telecommunications, electronic commerce, the Internet, biotechnology, ethical and equity considerations, and financing. These issues are examined from the perspectives of the legal, business, capital, development, consumer, and policy-making communities. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5600 - Innovating for the Developing World (3 Credits)

Graduate version of IWKS 3600. Explores the design and development of products and services that can be sustainably and gainfully used by the world's poorest citizens. Students in interdisciplinary teams will design, implement and evaluate viable solutions to real problems faced by people in the developing world. The goal is to develop an understanding of the extraordinary challenges faced by individuals for whom basic survival is not a given, and the knowledge and skills necessary to create designs that respond appropriately to those unique circumstances. Provides a foundation for further study and practice in the area of technology and development. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5620 - Mobile App Development (3 Credits)

Graduate version of IWKS 3620. Introduces mobile application development, including front-end mobile application clients, data handling, connectivity to back-end services and cloud hosting. The course provides an overview and comparison of technical approaches employed by Apple iOS, Google Android, and cross-platform development environments. Students will install, develop, test, and distribute mobile applications while addressing challenges associated with development for any mobile platform: limited screen size and memory, gesture based GUI, varying connectivity, and the wide variety of target mobile devices. Suggested Background: IWKS 5100 & IWKS 5350 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5650 - Innovating for the Developing World (3 Credits)

Explores the design of products and services that can be sustainably used by the world's poorest citizens. Students design, implement and evaluate solutions to real problems in the developing world. Provides a foundation for further study and practice. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5680 - Case Studies in Design (3 Credits)

Graduate version of IWKS 4680. Explores why some projects succeed and others fail. Many human-centered interventions fail to meet their designers' objectives, reflecting the unique challenges associated with matching human need with feasibility. Explores how innovators can increase their chances for success by examining several successful (and unsuccessful) designs. Suggested Background: IWKS 5100 & 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5700 - Innovation and Society (3 Credits)

Graduate version of IWKS 3700 Analyzes impact of innovative design on work, sense of self, and social systems, in education, healthcare, finance, and other sectors. Investigates how people customize / "hack" technologies they use, and the moral / ethical implications of being designers. Students will research the impact of an innovation of their choice and share via essays, models, videos, or another medium of their choice. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5750 - Critical Analysis of Design (3 Credits)

Graduate version of IWKS 3700. Examines technologies that pervade daily life. Analyzes impact of designs on work lives, sense of self, and social systems, within education, healthcare, finance, and other sectors. Investigates how technologies are customized and ethical implications of designing systems for others. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5800 - StartUp: Creating New Ventures (4 Credits)

Teams of students are guided to create and launch a new company in a single semester. Culminates in a "pitchfest" to area entrepreneurs and venture capitalists. One of two alternative capstone courses for the Inworks Minor in Design and Innovation. Restriction: Requires enrollment in the Inworks HCDI minor or certificate, or instructor permission. Suggested Background: Completion of at least three other Inworks courses. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Requires enrollment in the Inworks HCDI certificate.

IWKS 5850 - Product Design (3 Credits)

Graduate version of IWKS 3850. Explores the design requirements associated with creating a product that will be manufactured in large quantities and used by potentially thousands of users. These requirements are often very different from those associated with creating a working prototype. This gap between prototype creation and starting a business offers an interesting and unique set of design challenges. As part of the course, teams of students will engage in a realistic product design cycle. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5900 - Graduate Capstone (4 Credits)

Graduate version of IWKS 4900. Working closely with project sponsors, students design, implement, and evaluate a project for use in local industry and non-profit organizations. One of two alternative capstone courses for the Inworks Graduate/Professional Certificate in Design and Innovation. Prereq: IWKS 5100 and enrollment in the Inworks graduate certificate. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: IWKS 5100 and enrollment in the Inworks graduate certificate.

IWKS 5930 - Special Topics in Human Centered Design and Innovation (1-4 Credits)

Emergent issues and professional developments in design, innovation and prototyping. Consult the current online Inworks Course List for semester offerings as new special topics courses are frequently added. With permission, may be repeated for credit. Restriction: Restricted to students with graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to students with graduate standing.

IWKS 5970 - Independent Study in Human Centered Design and Innovation (1-6 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design, innovation and prototyping. With permission, may be repeated for credit. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Human-Centered Design and Innovation Graduate Certificate

Introduction

Augment your existing expertise with an interdisciplinary understanding of design and innovation processes. The Inworks graduate certificate in Human-Centered Design and Innovation (HCDI) will expand your ability to contribute to interdisciplinary teams that seek to address complex human problems.

Please contact your graduate advisor about adding the certificate in HCDI or email us at inworks@ucdenver.edu for more information.

Mechanical Engineering

Chair: Samuel W. J. Welch

Office: North Classroom 2024

Telephone: 303-315-7500

Website: ucdenver.edu/mechanical (<http://ucdenver.edu/mechanical/>)

Overview

Mission Statement

The mission of the Department of Mechanical Engineering is to contribute to the economic development of the state of Colorado and the Denver metropolitan area by providing high-quality bachelor's, master's (BS, MS and MEng) and PhD programs in mechanical engineering for a diverse group of working students.

Program Objectives

The programs offered by the Department of Mechanical Engineering of the University of Colorado Denver can be completed in the afternoon and evening hours to accommodate both working and traditional students. The department seeks to graduate a diverse population of students with bachelor's and master's degrees, who within a few years of graduation are able to:

- be employed by a diverse group of industries, research laboratories and educational institutions
- pursue careers in engineering, interdisciplinary areas, research and education
- pursue postgraduate education and advanced degrees

Graduate

The Department of Mechanical Engineering offers graduate courses, a master of science (MS) (p. 232) degree program and a master of engineering (MEng) (p. 232) program. In addition, the multidisciplinary engineering and applied science doctor of philosophy (p. 223) degree is available through the Department of Mechanical Engineering. The areas of research interest in which a student may undertake studies at the Denver campus include manufacturing processes, fluid mechanics, solid mechanics, bioengineering, energy thermodynamics and composite materials.

As a student in the MS or MEng program, you must meet with your graduate advisor before or during your first semester and design a sequence of elective courses that form a coherent program plan.

Concurrent Bachelor's/Master's Degrees

Students wishing to obtain a BS degree with a major in mechanical engineering and either the MS or the MEng degree in mechanical engineering may do so with up to 6 semester hours of 5000-level or above courses applying to both degrees. The 5000-level courses must meet the degree requirements for the graduate degree sought and must be suitable technical electives for the undergraduate degree. This option is open only for students seeking both degrees at CU Denver. Students must meet admission requirements to be accepted into the graduate program. Completion of two 5000-level courses does not guarantee admission into the graduate program. Please see an advisor for restrictions and guidelines.

Engineering and Applied Science PhD Program

The engineering and applied science doctor of philosophy program consists of studies in engineering and engineering-related disciplines. It is a multidisciplinary program in keeping with the interdisciplinary nature of modern research. The degree is conferred by the College of Engineering, Design and Computing. However, applicants to the degree program apply to and enter the program through one of four departments, called the host department, of the college. The applicant chooses his/her host department based on his/her intended primary concentration of study. The four departments of the college that serve as host departments are Civil Engineering, Computer Science and Engineering, Electrical Engineering and Mechanical Engineering. Each host department offers several concentrations. The secondary concentration can be chosen from any remaining department of the college, including Bioengineering. The secondary concentration may also be chosen from another college/school at CU Denver. The course work in the primary and secondary areas must consist of ten courses (30 semester hours). In addition to other courses, a student must take at least five courses in his/her primary area of concentration and at least three courses in a secondary area of concentration. Other courses may be recommended by the student's advisor. Research that spans across two or more of the five college departments is strongly encouraged and is a major strength of the program.

Admissions to Mechanical Engineering

All applicants should apply online at: www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx (<http://www.ucdenver.edu/academics/colleges/Graduate-School/prospective/Pages/apply.aspx>)

Inquiries about graduate study in mechanical engineering should be addressed to:

CU Denver Department of Mechanical Engineering

Campus Box 112
P.O. Box 173364
Denver, CO 80217-3364

Applicants who are not citizens or permanent residents of the United States should make application through the

Office of International Admissions

Campus Box 185
P.O. Box 173364
Denver, CO 80217-3364

(See the International Students (p. 44) section of the catalog.) All applicants for admission must submit complete credentials as outlined in the instructions that accompany the application materials.

Programs

- Engineering and Applied Science, PhD (p. 231)
- Mechanical Engineering, MEng (p. 232)
- Mechanical Engineering, MS (p. 232)

Faculty

Associate Professors:

R. Dana Carpenter, PhD, Stanford University
Kannan N. Premnath, PhD, Purdue University
Ronald A. L. Rorner, PhD, Virginia Polytechnic Institute and State University, PE-Colorado
Samuel W. J. Welch, PhD, University of Colorado Boulder
Christopher M. Yakacki, PhD, University of Colorado Boulder

Assistant Professors:

Maryam Darbeheshti (clinical teaching track), PhD, University of Denver
Guoying Dong, PhD, McGill University
Brecca Gaffney, PhD, University of Denver
Kai Yu, PhD, Georgia Tech

Senior Instructor:

Joseph F. Cullen Jr., MS, University of Colorado

Instructor:

Douglas Gallagher, BS Engineering Physics, Colorado School of Mines

Professors Emeriti:

James Gerdeen, PhD, Stanford University
Peter E. Jenkins, PhD, Purdue, MBA, Pepperdine, PE-Texas
J. Kenneth Ortega, PhD, University of Colorado Boulder

Associate Professor Emeritus:

B. Thomas Arnberg, MS, University of Colorado

Mechanical Engineering (MECH) Courses

MECH 5001 - Seminar: Introduction to Research (1 Credit)

This course is intended to introduce graduate students to the fundamental skills and methods needed to perform research. Topics include writing technical papers, presentation skills, testing methodology, hypothesis creation and more. Max Hours: 1 Credit.

Grading Basis: Letter Grade

MECH 5020 - Biomechanics (3 Credits)

Static and dynamic biomechanical analysis, effects of mechanical loading on bone and cartilage, design considerations in orthopaedic devices, muscle function, biomechanics of human movement, cardiovascular biomechanics. Graduate standing or permission of the instructor required. Cross-listed with MECH 4020. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

Typically Offered: Summer.

MECH 5024 - Mechanical Behavior of Materials (3 Credits)

Students will learn about the mechanical behavior of materials using a multi-scale, materials oriented approach. The course will relate how atomistic and molecular mechanisms relate to macroscopic and continuum properties of materials across acute and long-term time scales. Graduate standing or permission of the instructor required. Cross-listed with MECH 4024. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

Typically Offered: Fall.

MECH 5025 - Advanced Biomechanics (3 Credits)

This course provides training in computational and experimental methods for biomechanical engineering analysis. Topics include finite element analysis of biological systems, orthopedic device design, medical imaging analysis, mechanical characterization of biological tissues, and biomechanics of human movement. Prereq: MECH 4020 or MECH 5020. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 4020 or MECH 5020

MECH 5110 - Numerical Methods for Engineers (3 Credits)

Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4110. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5112 - Introduction to Internal Combustion Engines (3 Credits)

This course provides an introduction to the major characteristics of internal combustion engines and defines the major parameters used to describe the engine operation and design conditions. Students perform analysis of the thermal performance of the engines. Graduate standing or permission of the instructor required. Cross-listed with MECH 4112. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5114 - Designing with Composites (3 Credits)

Analysis and design of polymers and polymer-based composites. Failure criteria include static strength, stiffness, creep, fatigue, impact and fracture toughness. Design criteria include strength-to-weight ratio and cost-to-strength ratio. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4114. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5115 - Applied Plasticity and Creep (3 Credits)

Plastic deformation of materials applied to bulk and sheet metal manufacturing processes such as extrusion, rolling and sheet metal. Linear and nonlinear viscoelastic creep with applications to plates and shells. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4115. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5120 - Methods of Engineering Analysis (3 Credits)

Selected topics from real analyses with applications to engineering analyses. Topics include vector calculus, ordinary differential equations, partial differential equations and calculus of variations. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4120. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5121 - Introduction to Fluid Dynamics (3 Credits)

Physical properties of gases and liquids; kinematics of flow fields; equations describing viscous, heat-conducting Newtonian fluids. Exact solutions and rational approximations for low- and high-speed dissipative flows, surface and internal waves, acoustics, stability, and potential flows. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5122 - Macroscopic Thermodynamics (3 Credits)

Axiomatic presentation of fundamentals of classical thermodynamics (first law); energy, work and heat. Equilibrium, reversible, and irreversible processes; entropy production and the second law. Applications to stability and phase equilibrium. Irreversible thermodynamics and the Onsager reciprocal relations. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5123 - Introduction to Continuum Mechanics (3 Credits)

Cartesian tensor notation. Deformation, strain, strain rate and compatibility. Definition of stress vector and tensor. Fundamental balance laws of mass, momentum and energy; entropy production inequality. Constitutive equations for elastic, viscoelastic and plastic materials; ideal, compressible, and viscous fluids. Beltrami-Mitchell and Navier-Stokes equations. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5124 - Yield-Limited Behavior of Materials (3 Credits)

Analysis of material behavior within the "elastic range," with emphasis on the phenomenon of yield and factors that influence it. Examination of the theory of dislocations; study of strengthening mechanisms in solids. Consideration of various time-dependent but reversible (inelastic) deformation phenomena. Presentation of appropriate engineering case studies to augment various topics. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a grade of B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5133 - Theory of Inelastic Materials (3 Credits)

Mathematical theory of linear viscoelasticity. Finite elements models. Solution of boundary-value problems in linear viscoelasticity. Non-Newtonian flow. Selected topics in nonlinear material behavior. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5141 - Viscous Flow (3 Credits)

Viscous incompressible fluid flows. Topics include derivation of equations governing viscous compressible fluid motion; specializations to simple flows; boundary-layer theory; similarity solutions; introduction to turbulence and Reynolds stresses. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4141. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5142 - Statistical Thermodynamics (3 Credits)

Introduces the molecular interpretation and calculation of thermodynamic properties of matter, thermodynamic probability, distribution functions, Schrodinger wave equations and solutions and ensemble theory. Applications to ideal and real gases, solids, liquids, radiation, conduction electrons, and chemical equilibrium. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5143 - Theory of Elasticity (3 Credits)

Review of the basic equations of linear theory of elasticity. St. Venant torsion and flexure. Plane strain, plane stress, and generalized plane stress. Application of conformal mapping and Fourier transform techniques. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5144 - Plasticity and Creep (3 Credits)

Inelastic deformation of materials such as metals, alloys, glasses, composites and polymers from the phenomenological and structural point of view. Case studies of plastic and creep deformations in engineering materials. Prereq: MECH 5143 with a grade of B- or higher and graduate standing or permission of the instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5161 - Compressible Flow (3 Credits)

Energy, continuity, and momentum principles applied to compressible flow; one-, two-, and three-dimensional subsonic, supersonic and hypersonic flows. Normal and oblique shocks, and method of characteristics. Prereq: MECH 5141 with a grade of B- or higher and graduate standing or permission of the instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5141 with a B- or higher Restriction: Restricted to graduate standing or higher

MECH 5162 - Heat Transfer I (3 Credits)

Review of equations governing transport of heat by conduction and radiation. Analytical and numerical solution of boundary value problems representative of heat conduction in solids. Radiation properties of solids, liquids and gases; transport of heat by radiation. Prereq: Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5163 - Dynamics (3 Credits)

Review of Newtonian dynamics, Lagrange's equation for particles, systems and rigid bodies. Conservative and non-conservative systems, moments of inertia, principal axes, angular momentum and Euler equations. Illustrations from spinning bodies, including tops, gyro-compass and rotating machinery. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4163. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5166 - Computerized Numerical Control (CNC) Manufacturing (3 Credits)

Modern manufacturing engineering concepts using computerized numerical control (CNC). The students learn state-of-the-art CNC methodologies, including digitizing, drawing, generating codes, and manufacturing using modern CNC machines. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4166. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5172 - Heat Transfer II (3 Credits)

Review of equations governing transport of heat in fluids in motion. Description of heat transfer in free and forced convection, including laminar and turbulent flow. Dimensional analysis and heat transfer correlations, numerical methods and combined heat transfer mechanisms. Graduate standing or permission of the instructor required. Prereq: MECH 5141 with a B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5141 with a B- or higher Restriction: Restricted to graduate standing or higher

MECH 5175 - Finite Element Stress Analysis (3 Credits)

Students learn basic theory of finite element analysis (FEA) as it applies to stress analysis and design of mechanical components. Commercial package will be used giving students practical experience in the use of FEA. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a B- or higher. Cross-listed with MECH 4175. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5176 - Introduction to Sports Engineering (3 Credits)

Sports Engineering requires working both with the principles of biomechanics and the principles of engineering design and analysis. Using biomechanics is necessary in understanding the forces on the interface between the human athlete and his/her equipment. Prereq: Graduate standing or permission of the instructor required. Cross-listed with MECH 4176. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5177 - Energy Conversion (3 Credits)

This introductory Energy Conversion course introduces the basic background, terminology, and fundamentals of various forms of energy conversion. The topics covered will include: fuel cells, batteries, photovoltaic systems, solar thermal, and wind energy. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4177. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5178 - Solar Engineering (3 Credits)

This course provides the student with the basic ideas and calculation procedures on how solar processes work and how their performance can be predicted. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4178. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5179 - Introduction to Turbomachinery (3 Credits)

This introductory Turbomachinery course introduces the basic background, terminology, and fundamentals of various forms of turbomachines. The analysis of the various turbomachines will be focused on the performance of the turbomachine. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4179. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5180 - Advanced Heat Transfer (3 Credits)

This course provides fundamental concepts and applicable mathematical techniques for understanding the physics of various modes of heat transfer. Topics include heat conduction in finite and semi-infinite domains, phase change, microscale heat conduction, laminar forced and free convection, turbulence forced and free convection, and thermal radiation. Prereq: Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

MECH 5182 - Microscale Transport Phenomena (3 Credits)

This course provides the foundations on the physics of microscale transport phenomena, where continuum effects break down, with applications in MEMS and NEMS. Topics include gas microflows, liquid microflows, surface tension-driven flows, electrokinetics transport, kinetic theory, simulation techniques, lattice Boltzmann methods. Restriction: Restricted to graduate students in the College of Engineering, Design and Computing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

MECH 5208 - Special Topics (1-3 Credits)

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4208. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate students

MECH 5228 - Special Topics (1-3 Credits)

Prereq: MECH 3032 (Electric Systems-Circuits Lab). Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: MECH 3032.

MECH 5238 - Special Topics (1-3 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate students

MECH 5840 - Independent Study (1-3 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of the particular student. Graduate standing or permission of the instructor required. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to graduate students

MECH 5939 - Internship (3 Credits)

Students gain engineering design experience involving application of specific technical concepts and skills in a supervised industrial environment. (Must have approval from MECH faculty.) Max Hours: 3 Credits.

Grading Basis: Letter Grade

MECH 5950 - Master's Thesis (1-6 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate students

Additional Information: Report as Full Time.

MECH 5960 - Master's Report (3 Credits)

Master of Science in Engineering report. Students seeking the Master of Science in Engineering, and who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under the supervision of a member of the graduate faculty. Graduate standing or permission of the instructor required. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to graduate students

Additional Information: Report as Full Time.

MECH 5970 - Graduate Problem Course (3 Credits)

The graduate problem course is for the solution of specific problems in MECH specialty areas. Each student is assigned a set of problems of some difficulty requiring the use of the literature of the various areas covered. Prereq: 15 hours of graduate level courses in MECH. Max Hours: 3 Credits.

Grading Basis: Letter Grade

MECH 6184 - Advanced Fluid Mechanics (3 Credits)

This course provides a description of the advanced concepts for understanding the physics of fluid motion under different regimes. Topics include kinematics, stresses, equation of motion, vorticity transport, low Reynolds number flow, irrotational flow, interfacial flow, acoustics&waves, hydrodynamic stability & transition, turbulent flow. Prereq: MECH 5141.

Restriction: Restricted to students with graduate standing, or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5141. Restriction: Restricted to students with graduate standing.

MECH 8990 - Doctoral Dissertation (1-10 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Restriction: Restricted to graduate students

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring.

Engineering and Applied Science, PhD

Introduction

The multidisciplinary Engineering and Applied Science Doctor of Philosophy degree program is offered by the College of Engineering, Design and Computing (p. 181) and consists of a primary and secondary concentration. Applicants apply and enter the program through one of four departments, called the host department, which is chosen based on the applicant's intended primary concentration of study. The four departments that serve as host departments are:

- Civil Engineering (p. 186)
- Computer Science and Engineering (p. 201)
- Electrical Engineering (p. 214)
- Mechanical Engineering (p. 227)

Each host department offers several concentrations. A list of concentrations can be found on each department's website. Go to engineering.ucdenver.edu (<http://engineering.ucdenver.edu>) to learn more.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering (p. 182). The secondary concentration may also be chosen from another CU Denver school or college. A student chooses his/her secondary concentration with the help of a faculty advisor after entering the program.

Graduate School Policies and Procedures (p. 59) apply to this program.

Requirements for Admission

Requirements for admission to the Engineering and Applied Science PhD program can be found at engineering.ucdenver.edu/graduate-admissions.

Program Requirements

The minimum degree requirements consist of:

- 30 semester hours of course work in the primary and secondary areas of concentration
- 30 semester hours of research/dissertation credit
- Each candidate for the degree is expected to take a preliminary examination by the end of the second year. After successful completion of this exam, the student is required to take the comprehensive examination and the doctoral dissertation defense examination.
- Additional requirements are outlined in the Rules and Regulations document that each student signs after being admitted to the program. Each student must also satisfy the degree requirements of the CU Denver Graduate School.
- Program must be completed within eight years of the date the student begins the degree program.

NOTE: for students applying through the Department of Civil Engineering, students must hold an earned master's degree before they can be admitted to a doctoral program in the Department of Civil Engineering; there is no direct admission from a bachelor's program to

the doctoral program. However, a student enrolled in a master's program may apply for the doctoral program before the master's degree is granted, as long as the master's degree is conferred before they enroll as a doctoral student at CU Denver.

Mechanical Engineering, MEng

Introduction

The master's of engineering (MEng) is an interdisciplinary degree program designed to meet the needs of those practicing engineers who wish to follow an integrated program of studies in engineering and allied subjects related to the individual student's professional work. Students can combine advanced engineering course work with graduate-level non-engineering courses such as business administration, environmental sciences, social sciences, biological sciences or public administration. There are also tracks in biomechanics and sports engineering.

Prospective students are required to present a well-defined objective in order to be admitted to the program. In consultation with faculty advisors, an academic program is developed to meet this objective.

An advisory committee will be appointed for each student by the department. The advisory committee that guides the student is responsible for approving the individual's degree program and admission to candidacy, and approves the student's written report and the awarding of the degree.

Graduate School Policies and Procedures (p. 59) apply to this program.

Program Requirements

The requirements for admission are the same as those for the MS degree awarded through the College of Engineering, Design and Computing. A minimum of 30 semester hours of academic work is required for the MEng degree. At least 15 of these hours must be at the 5000 level or above in mechanical engineering. A maximum of 12 semester hours may be taken outside of engineering.

In addition to course work, a written report is required in the MEng program as a final project (3 semester hours). The report may be related to the student's professional work. The report will be of the same general quality as that required for the master of science thesis and must be defended orally. It may be based on work done for credit under independent study.

Mechanical Engineering, MS

Introduction

Graduate School Policies and Procedures (p. 59) apply to this program

Program Options

Students in each of the plans may choose one of four options. In the first three options, the student may choose to specialize in thermal science, mechanics or biomechanics. The fourth option is the general mechanical engineering option.

- The **thermal science option** requires 12 semester hours of course work in analytical methods, numerical methods, fluid mechanics and thermodynamics. The student then selects 9 semester hours of course work in approved electives from a selection of thermal science electives.

- The **mechanics option** requires 12 semester hours of course work in analytical methods, numerical methods, elasticity and dynamics. The student then selects 9 semester hours of course work in approved electives from a selection of mechanics electives.
- The **biomechanics option** requires 31 credit hours to graduate. Please contact the mechanical engineering department or visit the biomechanics website for more information.
- The **general mechanical engineering option** requires the student to take 18 semester hours of required course work in analytical methods, numerical methods, fluid mechanics, thermodynamics, elasticity and dynamics.

After meeting the course requirements for any of the four options the student may select any mechanical engineering graduate course to complete the credit-hour requirements. The student may also take courses approved by an advisor outside of the mechanical engineering department.

Program Requirements

For the master of science (MS) degree in mechanical engineering, students may choose between three plans with each plan totaling 30 semester hours.

- Plan I - Students following Plan I (thesis option) take 24 semester hours of formal course work plus 6 semester hours of thesis work.
- Plan II - Students following Plan II (project option) take 27 semester hours of formal course work plus a 3 semester hour final project requiring a report.
- Plan III - Students following Plan III (10-course option) take 30 semester hours of formal course work plus a final comprehensive exam.

Students following Plan I or Plan II must submit a proposal to their examination committee prior to the semester in which they register for their thesis or project semester hours, and the examination committee must approve the proposal for the thesis or project.

College of Liberal Arts and Sciences

Leadership

DEAN

Pamela Jansma, Professor of Geography and Environmental Sciences

ASSOCIATE DEANS

Richard Allen, Associate Dean for Teaching, Learning and Curriculum; Professor of Psychology

Laura Argys, Associate Dean for Research and Creative Activities; Professor of Economics

Kathleen, Bollard, Associate Dean for Faculty and Staff Affairs; Professor of Spanish

Marjorie Levine-Clark, Associate Dean for Diversity, Outreach and Initiatives; Professor of History

Stephanie Santorico, Interim Associate Dean for Research and Creative Activities; Professor of Economics

David P. Tracer, Associate Dean for Student Success; Professor of Health & Behavioral Sciences

Contacts

CLAS Deans Office

North Classroom, Suite 5014

Phone: 303-315-7000
 Fax: 303-315-7016
 Email: clasdeansoffice@ucdenver.edu
 Website: <https://clas.ucdenver.edu/about-us/deans-office> (<https://clas.ucdenver.edu/about-us/deans-office/>)

The mission of the College of Liberal Arts and Sciences is to foster academic excellence, to create and impart knowledge critical to a modern society and a global economy, and to ensure the acquisition of skills essential for professional careers and graduate study. Our vision is to enact a new paradigm for a liberal arts education that retains the proven values of a broad education while imparting career-oriented skills throughout the curriculum.

While establishing a broad foundational education, CLAS gives students the opportunity to dig deeply into disciplinary and interdisciplinary programs, which train them in scholarly fields, traditions, and methods of analysis. This combination of breadth and depth prepares students for our twenty-first century world, which requires flexibility and mobility, as new jobs develop and careers change at an ever-faster pace. CLAS graduates enter a wide variety of occupations and pursue advanced degrees in academia and in professions like law and medicine.

The College of Liberal Arts and Sciences offers a selection of master's and doctorate degrees across fourteen departments. Our graduate programs provide students the opportunity to work with cutting edge facilities and renowned faculty. In addition to high-quality classroom instruction, graduate students are encouraged to take opportunities to participate in seminars, workshops, and experiential opportunities to develop additional real-world skills necessary to successfully transition into their careers. The college offers graduate certificate programs that demonstrate proficiency in a specialized field of study. Certificates may cross traditional disciplinary boundaries and may be awarded independently of formal graduation. Certificate programs are open to degree-seeking students as well as those who aren't seeking a degree but want to enhance their professional expertise. Many programs offer funding opportunities, Teaching and Research Assistant positions and participate in the Western Regional Graduate Program (<https://graduateschool.ucdenver.edu/admissions/western-regional-graduate-program/>).

Explore CLAS Graduate programs here (p. 234).

For more information about CLAS, visit our website. (<https://clas.ucdenver.edu/academic-programs/graduate-programs/>)

College of Liberal Arts and Sciences Educational Goals

A CU Denver liberal education combines world-class knowledge in specific disciplines with the comprehensive skills and dispositions that students need for success and that our society needs its citizens to possess. In a world where content knowledge rapidly becomes obsolete and where graduates may have a dozen different jobs, these skills and dispositions are crucial. Employers increasingly look for employees who can think critically, communicate clearly, and solve complex problems. A liberal education may be the most vocational education that today's student can earn. A liberal arts and sciences education truly is "learning with purpose."

The College of Liberal Arts and Sciences defines liberal education as including four major components:

1. Central elements of knowledge including:
 - a. knowledge of the diversity and significant dimensions of human culture and a specific understanding of American culture, including its political and ethnic diversity;
 - b. aesthetic awareness and appreciation of the cultural contributions made to the human experience by the social sciences and humanities;
 - c. an understanding of the methods of inquiry and development of theory that form the basis of knowledge in the natural and physical sciences;
2. Essential skills for critical analysis, writing, computation, communication and decision making;
3. The development of a constructive orientation toward society through the enhancement of the individual's capacity to make informed and responsible choices based on reflective consideration of the democratic principles of due process, civil liberties and the balance between individualism and the common good;
4. The ability to apply knowledge of the arts and sciences to society's specific needs.

Graduate School Information and Academic Advice

The College of Liberal Arts and Sciences partners with the Graduate School to assist with the administration of our graduate degrees. Graduate students in the college are expected to assume responsibility for planning their academic programs in accordance with Graduate School Rules, CLAS policies and degree program requirements. Graduate students must work with the Student Progress Coordinator in the Graduate School in addition to their faculty advisor upon matriculation into the college. The Student Progress Coordinator in the Graduate School is responsible for advising graduate students of University and Graduate School policies and procedures and for certifying that degree requirements have been met for graduation purposes.

Graduate students should meet with a faculty advisor in their department as soon as they begin their degree program. The faculty advisor is responsible for advising students about coursework and degree requirements and for certifying that program requirements are complete at graduation. Students should consult with their faculty advisor at least once a semester following admission to the program. While students are strongly encouraged to meet with their faculty advisor every semester, they must meet with their faculty advisor at the beginning of their last semester to verify that all degree requirements have been met and to have their candidacy form approved and signed. This must be done before the campus census date and is considered an absolute deadline.

To learn more about admissions, transfer credits, readmission, changing degree programs, graduate courses, GPA requirements, residency requirements, academic probation, incomplete grades, thesis/project/dissertation procedures and defense, research protocol, comprehensive exams, application to graduate and candidacy to graduate, deadlines and time limits, please consult with your faculty advisor and refer to the Graduate School Policies and Procedures (https://www.ucdenver.edu/docs/librariesprovider138/denver-anschutz-graduate-school/resources/graduate-school-policies-and-procedures.pdf?sfvrsn=d00622b9_2).

For more information about the Graduate School, visit the website (<https://graduateschool.ucdenver.edu/>).

Graduate School Dean's Office

Lawrence Street Center, Suite 1251
 Phone: 303-315-2183

Email: graduate.school@ucdenver.edu

David Engelke, Graduate School Dean

Inge Wefes, Graduate School Associate Dean

Stephanie Puello, Graduate School Student Progress Coordinator

Kelly Santa-Maria, Director of Graduate Admissions

The mission of the College of Liberal Arts and Sciences is to foster academic excellence, to create and impart knowledge critical to a modern society and a global economy, and to ensure the acquisition of skills essential for professional careers and graduate study. Our vision is to enact a new paradigm for a liberal arts education that retains the proven values of a broad education while imparting research and career-oriented skills throughout the curriculum.

The College of Liberal Arts and Sciences (CLAS) offers a variety of excellent graduate programs, ranging from the highly specialized PhD in Clinical Health Psychology to the broad interdisciplinary MA in Humanities or Social Sciences. CLAS faculty members are recognized as research leaders, dedicated mentors, and engaged scholars. Bringing real-world experience and academic expertise to our classrooms, CLAS faculty are dedicated to instilling in students a lifelong love of learning and inquiry, cutting-edge research training, respect for free thinking and commitment to collaborative endeavors. Our graduate programs draw on our downtown location and make use of the city's many resources partnerships with Denver businesses and non-profit organizations. CLAS students have excellent opportunities to participate in first-class research in collaboration with faculty and the community.

Continuing and Professional Education (CPE)

The College of Liberal Arts and Sciences (CLAS) participates in the University's Continuing and Professional Education (CPE) programs, which include credit courses offered through extended studies during evenings, weekends and at off-campus sites. CPE also includes non-credit courses offered for continuing education units (C.E.U.s) or for professional development and personal enrichment.

For more information about CLAS CPE programs, visit our website.
(<https://clas.ucdenver.edu/cpe/>)

College of Liberal Arts & Sciences Graduate Departments and Programs

Graduate degree programs offered by CLAS are listed below. Many degrees provide the opportunity for students to specialize in concentrations within the discipline; these are noted below the degree title.

- Anthropology (p. 235)
 - Anthropology, MA (p. 240)
- Chemistry (p. 243)
 - Chemistry, MS (p. 247)
- CLAS Interdisciplinary Certificates (p. 249)
 - Digital Studies Certificate (p. 249)
- Communication (p. 251)
 - Communication, MA (p. 255)
 - Strategic Communication Graduate Certificate (p. 256)
- Dual Degrees (p. 257)
 - Economics MA/Applied Mathematics MS Dual Degree, with a Focus in Applied Statistics (p. 257)
 - Economics MA/Finance MS Dual Degree (p. 259)
 - Economics MA/Public Administration MPA Dual Degree (p. 260)
- Economics (p. 262)
 - Health Economics, MS (p. 269)
 - Health Economics, PhD (p. 270)
 - Economics, MA (p. 271)
 - Applied Econometrics and Data Analytics Graduate Certificate (p. 272)
 - Health Economics and Outcomes Research Graduate Certificate (p. 273)
- English (p. 274)
 - English, MA (p. 279)
 - Teaching College-level Language and Literacy Certificate (p. 281)
 - Teaching College-Level Literature and Film Graduate Certificate (p. 282)
 - Teaching English Language Learners Graduate Certificate (CTELL) (p. 283)
- Ethnic Studies (p. 284)
 - Ethnic Studies Graduate Certificate (p. 286)
- Geography and Environmental Sciences (p. 287)
 - Applied Geography & Geospatial Science, MA (p. 300)
 - Environmental Sciences, MS (p. 302)
 - Environmental Science Education Graduate Certificate (p. 306)
 - Free and Open Source Software for Geospatial Applications Graduate Certificate (p. 307)
 - Geographic Information Science Graduate Certificate (p. 309)
 - Sustainable Urban Agriculture Graduate Certificate (p. 310)
- Health and Behavioral Sciences (p. 311)
 - Health and Behavioral Sciences, PhD (p. 315)
- History (p. 317)
 - History, MA (p. 323)
 - Public History, MA in History (p. 328)
 - Global History Graduate Certificate (p. 330)
 - U.S. History Graduate Certificate (p. 330)
- Humanities (p. 331)
 - Humanities, MH (p. 334)
- Integrated Sciences (p. 338)
 - Integrated Sciences, MIS (p. 340)
- Integrative Biology (p. 341)
 - Biology, MS (p. 346)
 - Integrative and Systems Biology, PhD (p. 347)
- Mathematical and Statistical Sciences (p. 347)
 - Applied Mathematics, MS (p. 360)
 - Applied Mathematics, PhD (p. 362)
 - Statistics, MS (p. 364)
 - Applied Statistics Graduate Certificate (p. 366)
- Modern Languages (p. 367)
 - Spanish, MA (p. 375)
- Political Science (p. 376)
 - New Directions in Public, Non-Profit and Community Leadership, Political Science, MA (p. 384)
 - Political Science, MA (p. 386)
 - Political Science MA / Master of Business Administration (MBA) Dual Degree (p. 388)

- Labor Leadership Certificate (p. 389)
- Public, Nonprofit and Community Leadership Graduate Certificate (p. 390)
- Psychology (p. 391)
 - Psychology, Clinical Health Psychology, PhD (p. 396)
- Social Science (p. 398)
 - Social Science, MSS (p. 401)
- Sociology (p. 405)
 - Sociology, MA (p. 408)
- Women's and Gender Studies (p. 410)
 - Women's and Gender Studies Graduate Certificate (p. 413)

College of Liberal Arts and Sciences Policies

For additional information regarding CLAS policies and procedures, please visit the CLAS Academic Policies website (<https://clas.ucdenver.edu/faculty-staff/content/academic-policies/>).

The Graduate School administers and serves all CLAS Master's programs, Doctoral programs, Certificates, and non-degree students. All programs must follow the Graduate School Policies and Procedures. (https://www.ucdenver.edu/docs/librariesprovider138/denver-anschutz-graduate-school/resources/graduate-school-policies-and-procedures.pdf?sfvrsn=d00622b9_2)

Independent Studies

Independent studies are faculty-mentored, individually structured courses or research or creative projects designed and scheduled outside of the standard course grid. Independent study allows for investigations beyond the structured curriculum and classroom and exploration of content material that closely relates to faculty and student interest. However, the College of Liberal Arts and Sciences does not guarantee that credit earned through an independent study will count toward graduation requirements or be accepted as transfer credits.

The CU Denver campus requires manual registration using a Special Processing Form for students participating in independent study. This form constitutes the course syllabus agreement between faculty and student. The Special Processing Form requires

1. project title,
2. short, detailed project description, including texts and practical application of skills, and
3. explicit performance or grading criteria.

The faculty should separately negotiate a schedule of meetings and deadlines with the student. The form is reviewed and approved by a CLAS Associate Dean/Assistant Dean prior to student registration.

The College faculty developed the following requirements relating to student and faculty participation in independent study. Faculty seeking to waive or modify any of the policies below should work with the appropriate CLAS Associate Dean/Assistant Dean.

Student Requirements

- Enrollment as a CLAS student or, if enrolled in another major/minor, school/college, or institution, signed authorization on the Special Processing Form by the advisor/chair/dean of the originating

- school/college or institution prior to review by the CLAS associate or assistant dean.
- Graduate student status for 5840 (or higher), junior or senior status for 4840, sophomore status for 2840.
- Minimum GPA of 2.5 for undergraduates and 3.0 for graduate students.
- Submission of the Special Processing Form prior to the third week of a regular semester. After the third week, a petition to add is required. Summer and intensive sessions will have different deadlines.

Faculty Requirements

- CLAS tenured, tenure-track, Clinical Teaching Track, Senior Instructor, or Instructor rank.
- CLAS graduate faculty status for faculty sponsoring graduate independent study.
- Direct, not indirect, supervision by the designated CLAS faculty member.
- For instructor-rank faculty, approval by the department chair, though all untenured faculty should limit the number of independent studies and are advised to consult with the chair before taking them on.

Project Requirements

- CLAS discipline or directly discipline related content, though may be interdisciplinary.
- Unique or individually executed project content for each student.
- Not available as, or part of, a structured course offered during the same term.
- 3 student participation hours per week for each credit hour requested. Note: 4:1 ratio in summer.

Anthropology

Chair: Marty Otañez

Program Assistant: Connie Turner

Office: North Classroom Building 4002

Undergraduate Advisor: Tiffany Terneny

Graduate Director: Sarah Horton

Telephone: 303-315-7328

Fax: 303-315-7336

Website: clas.ucdenver.edu/anthropology/ (<http://clas.ucdenver.edu/anthropology/>)

Overview

Graduate School Policies and Procedures (p. 59) apply to this program

The unique intellectual challenge of anthropology is to integrate knowledge from many disciplines for a global understanding of cultural and biological diversity in the past and the present. Individual courses in cultural and biological anthropology and archaeology cut across lines of the humanities and social and natural sciences. Because of this integrative perspective on the human condition and the training provided in objectively assessing cultural patterning and social interaction—anthropology graduates have a strong and versatile base for careers in a variety of fields. Graduates of our program get jobs as professional archaeologists; work in international NGOs as researchers in the health sciences and public health, as college teachers and in international development; while others have been very competitive in prestigious PhD programs (e.g., Berkeley, Pennsylvania, McMaster, Oxford, Stanford).

Specialties and Tracks

CU Denver's Department of Anthropology provides an outstanding graduate education in anthropology, giving students a broad yet thorough grounding in the three major subfields of anthropology, as well as specialized instruction in one or more research orientations in which department faculty have substantial expertise. The graduate faculty in anthropology are particularly known for their research and publications in medical anthropology; immigrant health and immigration; disability; maternal and child health; human growth and development; human evolution; modern human variation; human locomotion; experimental economics; visual anthropology; ethnicity and identity; political economy; Southwestern, Mexican and Neanderthal archaeology; paleoenvironment; and urban and community anthropology. Across the specializations there is a strong emphasis on research design and methodology, providing students concrete job-related skills. Area studies emphases include Latin America, East Africa, the Mediterranean, and the US Southwest. Students also have opportunities to study abroad, to participate in one of several field schools, and to gain international research experience.

Topical Concentrations

- Medical Anthropology
- Archaeology
- Biological Anthropology

Click here (p. 240) to learn about the **Anthropology MA Plans of Study**.

The graduate program in Anthropology is an active participant in the Western Interstate Commission for Higher Education's Western Regional Graduate Program (www.WICHE.edu (<http://www.WICHE.edu>)). Students from WICHE states (Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming) pay in-state tuition while maintaining residency in their home state. Just indicate in your application packet that you wish to take advantage of this program.

Financial Aid

The department offers limited tuition assistance, teaching assistantships and research assistantships for graduate students on a semester-by-semester basis. Appointment is competitive and is typically based on a student's academic credentials, GRE scores and preparation in anthropology. Contact the department for details. For information on grants, federal work-study programs, scholarships and loans, contact the CU Denver Financial Aid Office (<https://www.ucdenver.edu/student-finances/financial-aid/>).

Application Process

Application is open to holders of a BA, BS or higher degree in any field. We welcome applications from individuals pursuing particular interests and careers, especially those related to one of the areas of concentration noted above. The departmental deadline for receipt of all application materials is **February 15** for admission the following fall.

Acceptance to the program is competitive and based on the application as a whole rather than preference in any one area:

- an undergraduate record of good quality (3.0 GPA or higher for all undergraduate studies)
- prior training in Anthropology¹
- GRE scores (verbal, analytic and quantitative)
- three letters of recommendation

- a statement of the applicant's goals, both in graduate school and in their career, after completing the degree
- One copy of transcripts from all undergraduate/graduate institutions attended

If you have no prior anthropology training, we encourage you to gain the necessary background as a non-degree student before applying to the graduate program.

¹ Students may be admitted without prior anthropology training, but may be required to make up deficiencies without graduate credit during the course of their graduate study.

Faculty

Professors:

Tammy Stone, PhD, Arizona State University
David Tracer, PhD, University of Michigan

Associate Professors:

Christopher Beekman, PhD, Vanderbilt University
Sarah Horton, PhD, University of New Mexico
Charles Musiba, PhD, University of Chicago
Marty Otañez, PhD, University of California-Irvine

Assistant Professors:

Jamie Hodgkins, PhD, Arizona State University
Christine Sargent, PhD, University of Michigan
Anna Warrener, Washington University St. Louis

Emeritus:

John Brett, PhD, University of California, San Francisco and Berkeley

Instructors:

Tiffany Terneny, PhD, University of Texas-Austin

Adjunct Faculty and Affiliated Faculty:

Sharon Devine, PhD, University of Colorado
Jean Scandlyn, PhD, Columbia University
Caley Orr, PhD, Arizona State University

Instructional Faculty:

Nicholas Denning
Michael Kilman
Gail Krovitz
Mary Shirley
Kristen Sweet-McFarling
Greg Williams

Anthropology (ANTH) Courses

ANTH 5000 - Special Topics in Anthropology (1-6 Credits)

Designed to give students a chance to evaluate critically some practical or theoretical problem under faculty supervision and to present results of their thinking to fellow students and instructors for critical evaluation. Prereq: Permission of instructor. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4000. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Anthropology graduate students

ANTH 5014 - Medical Anthropology: Global Health (3 Credits)

This course is concerned with the underlying biological and cultural determinants of health throughout the human life cycle in global and cross-cultural perspective. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is ANTH 5024. Prereq: Graduate standing. Cross-listed with ANTH 4010. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5030 - Ethnobiology (3 Credits)

Considers the relationship between human society and plants and animals in the natural world. Primary focus on the perception and cognitive organization of the environment and how that affects the definition and use of plants and animals as resources. Note: this course assumes that students have completed introductory coursework in anthropology and/or biology. Prereq: Graduate standing. Cross-listed with ANTH 4030. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5053 - Quantitative Methods in Anthropology (3 Credits)

Surveys the ways of deriving meaning from anthropological data by numerical means, including, but not confined to basic statistical procedure. Note: this course assumes that students have completed a college-level algebra course. Prereq: Graduate standing. Cross-listed with ANTH 4050. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5060 - Evolutionary Medicine (3 Credits)

Evolutionary medicine is a relatively new approach for understanding patterns of human health and disease. In this course, students will learn how human evolutionary history has shaped our susceptibility and resistance to both chronic and infectious diseases. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4060 and PBHL 4060. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5070 - Culture of Development and Globalization (3 Credits)

Anthropological critiques of development and globalization point out that they have occurred without regard for the diversity of human culture and human need. Beginning with this analysis, this course goes one step further by examining culture and values of development and how they affect the way development gets done. Note: students should consult with the instructor prior to enrolling in this course. Prereq: Graduate standing. Cross-listed with ANTH 4070. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5080 - Global Health Practice (3 Credits)

A travel-study course that provides students the opportunity to work on global health issues in the context of a supervised internship experience. In addition to a formal internship placement or directed research opportunity, students attend formal lectures and participate in seminars devoted to addressing those health issues most relevant to the country in which the course is being taught. Note: this course assumes that students have completed HBSC/ANTH 4010/5014, HBSC/ANTH 4020/5024, HLTH 6070 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4080 and PBHL 4080. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5121 - Zooarchaeology (3 Credits)

Introduction to the theory and methods of zooarchaeology through lectures, readings, and hands-on lab work identifying and analyzing mammalian skeletal material. Students will learn what mammalian remains indicate about biological and cultural evolution of humans. Cross-listed with ANTH 4121. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5200 - Gender in Cross-Cultural Perspective (3 Credits)

A comparative analysis of gender-based status and social roles of women and men, with women's status and roles emphasized due to their near-universal construction as the "other" sex. Examines, in cross- and sub-cultural context, the relations among women's status and their subsistence and reproductive activities; and the division of labor by sex, ideology and political economy. Prereq: Graduate standing. Cross-listed with ANTH 4200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5230 - Anthropology and Community Based Participatory Research (3 Credits)

The seminar explores anthropological critiques, knowledge production and multi-media approaches to community based participatory research (CBPR) such as photovoice and digital storytelling to understand the history of CBPR and analyze partnerships between university researchers and community representatives. Prereq: Graduate standing. Cross-listed with ANTH 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5260 - Human Reproductive Ecology (3 Credits)

Considers the determinants of fertility variation within and among traditional human societies. Biocultural and ecological perspectives on pubertal timing, marriage patterns, birth seasonality, duration of birth intervals and reproductive senescence. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4260. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5270 - Anthropology of the Body (3 Credits)

Explores how society, through culture, creates collective and individual bodies; embodied experience across the life course; and the body as an expression of social power, bodily modification and adornment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ANTH 4270. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5290 - Anthropology and Public Health (3 Credits)

This course critically explores anthropological approaches to public health problems. Through a number of key issues and case studies, we examine how public health practice can be enhanced through anthropological research, theory and methodology. Prereq: Graduate standing. Cross-listed with ANTH 4290. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5300 - Migrant Health (3 Credits)

This course examines health issues associated with transnational migration from an anthropological point of view. Drawing upon case studies, we examine the health of migrant communities in both host and sending nations. Prereq: Graduate standing. Cross-listed with ANTH 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5320 - Archaeology of Mexico and Central America (3 Credits)

Surveys the major prehistoric and protohistoric cultures and societies of that area of Mexico and Central America identified with the evolution of Meso-American civilization. Major topics include early human colonization of the Americas, the domestication of plants and animals, the emergence of regionally-based cultures and societies, trade and exchange and the evolution of urbanism and the state. Primary emphasis on such ancient cultures and societies as those of the Olmec, Zapotec, Maya, Teotihuacan, Toltec and Aztec. Note: this course assumes that students have completed an introductory archaeology course. Prereq: Graduate standing. Cross-listed with ANTH 4320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5330 - Lithic Analysis (3 Credits)

Examines the theoretical basis and methodological tools used by archaeologists in the analysis of prehistoric stone tools. Topics of discussion include the mechanics of stone fracture, typologies, use wear analysis and core reduction techniques. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4330. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5350 - Anthropology of Globalization (3 Credits)

This course provides an overview of anthropological contributions to the study of globalization. Particular attention is devoted to: transformations in global capitalism, state and immigration policy, transnational families, health and transnationalism. Note: previous coursework in anthropology is strongly recommended for success in this course. Prereq: Graduate standing. Cross-listing ANTH 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5380 - Archaeology of Hunters-Gatherers (3 Credits)

Explores the theory and methods used by archaeologists to investigate prehistoric hunter gatherers. Topics of concern include mobility, subsistence, procurement, and socio-political organization. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5400 - Archaeology of Power and Inequality (3 Credits)

Addresses inequality and power through a long-term archaeological and theoretical perspective. Discusses explanations for the origins of power and inequality and their role in early small-scale societies and emerging complex politics. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4400. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5440 - Museums in the 21st Century (3 Credits)

This is an advanced course on natural history/anthropology museums. It will examine practical issues facing museums, and consider the complex questions that museums raise. The class includes lectures, discussions, and hands-on collection work, and exhibit/ outreach development.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ANTH 4440. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5500 - Advanced Issues in Human Evolution (3 Credits)

This flexible course offers an advanced treatment of issues in human biological evolution. Topics may emphasize morphological evolution, behavioral evolution, the environment of human evolution, non-human primate comparative information. Prereq: Graduate standing. Cross-listed with ANTH 4500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5530 - Anthropological Genetics (3 Credits)

An advanced survey of molecular and population genetics and their applications in anthropology. Topics vary, including but not limited to: genetic epidemiology, genetic distance studies, behavioral genetics, developmental genetics, sociobiology, and use of mitochondrial DNA to reconstruct population histories. Emphasis is on applications of new technology and methodology, as well as new genetic paradigms replacing classical models of genetic causation. Note: this course assumes that students have completed undergraduate coursework in biological anthropology or genetics. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5550 - Primate Comparative Anatomy (3 Credits)

Examines human and non-human primate anatomical diversity. Students learn primate anatomy and the morphological differences among species. Explanations for the evolutionary origins of differences are reviewed, focusing on evolutionary theory, comparative methods and biomechanics. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4550. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5560 - Human Ecology (3 Credits)

Studies demographic and ecological variables as they relate to human populations. Aspects of natural selection, overpopulation and environmental deterioration are considered. Note: this course assumes that students have a background in biological or physical anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4560. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5570 - Landscape Archaeology (3 Credits)

Introduces spatial archaeology through intrasite analysis and regional studies. Methods treated include site location and quantitative spatial organization. Theoretical topics include definitions of community, ancient urbanism and the impact of subsistence and politics on relations to the landscape. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4570. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5580 - Neanderthals and the Origin of Modern Humans (3 Credits)

Focuses on the human fossil record for the taxon *Homo sapiens*, including the earliest members of this group ("early" or "Archaic" *Homo sapiens*), the Neanderthals and so-called "Anatomically modern" *Homo sapiens*. The goal of the course is to survey the major issues within the area of modern human origins, and to learn about the evolutionary relationships, lifeways and behaviors of these groups. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4580. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5590 - Primate Behavior (3 Credits)

Studies nonhuman primate behavior with emphasis on understanding social behavior, ecology and issues related to human evolution. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4590. Max Hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5600 - Medical Anthropology (3 Credits)

Introduces students to the theories and concepts of medical anthropology, the study of human health and illness. Explores conceptions of the body, modalities of healing, the clinical encounter, and new medical technologies. Prereq: Graduate standing. Cross-listed with ANTH 4600. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5640 - Darwinian Approach to Human Behavior (3 Credits)

The evolution of human behaviors from a Darwinian perspective, focusing on the natural selection of behaviors that maximize reproductive success. Includes topics such as male and female reproductive strategies, female mate choice, male violence and resource acquisition and control. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4640. Max Hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5800 - Special Topics in Medical Anthropology (3-9 Credits)

Seminar series on current issues in medical anthropology. Faculty offer a range of different courses, including the political economy of drugs, health and human rights, and reproductive health. Prereq: graduate standing. Repeatable. Cross-listed with ANTH 4800. Max hours: 9 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5810 - Integrating Anthropology (3 Credits)

Designed to build on specialized course work in the subdisciplines of anthropology, this course emphasizes the basic concepts that integrate and unite the discipline and give it unique perspective. These are the concepts of culture, adaptation and human evolution. In the last several weeks of the course, students consider the applicability of the anthropological perspective to specific human issues. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4810. Term offered: fall. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Anthropology graduate students

ANTH 5840 - Independent Study (1-6 Credits)

Directed study based on a specific subfield of anthropology. Prereq: Permission of instructor required. Repeatable. Max Hours: 12 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

ANTH 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ANTH 5910 - Field Experience in Archaeology (3-6 Credits)

Students participate in archaeological field research and data recovery and conduct laboratory analysis of materials recovered in the field. Emphasis is placed on excavation technique and accuracy of record keeping. Note: this course assumes that students have a background in archaeology. Prereq: Graduate standing. Cross-listed with ANTH 4910. Repeatable. Max Hours: 9 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

ANTH 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Max hours: 9 Credits. Grading Basis: Letter Grade

ANTH 6000 - Seminar in Current Research Topics (1-3 Credits)

An inquiry into current research of critical and general interest to anthropologists. Variable format. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6040 - Advanced Topics in Medical Anthropology (1-4 Credits)

A flexible seminar format for dealing with topics of special interest in medical anthropology on an advanced graduate level. Topics to be considered vary from semester to semester. Examples include high altitude adaptation, anthropological perspectives on substance abuse, epidemiology, environmental and occupational health, the health consequences of cultural change and cross-cultural psychiatry. Note: Topics vary from semester to semester. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6041 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice and property rights.

Prereq: Graduate standing. Cross-listed with HBSC 6320 and 7320. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6063 - Qualitative Research Design and Methods (3 Credits)

Much of the data collected in the social sciences is interview and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction:

Restricted to Anthropology graduate students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Anthropology graduate students

ANTH 6103 - Current Theory in Ethnography (3 Credits)

An in-depth inquiry into important theories in cultural anthropology through extensive primary source reading. Practice in formulating theory, critical thinking and theoretical writing are emphasized. Note: First course in a two-course required graduate sequence. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6133 - Anthropological Perspectives on Language (3 Credits)

An intensive introduction to linguistic anthropology. Following a brief survey of technical linguistics, focus is on: the roles of language in society; multilingualism; language and identity; language and worldview; language, gender, class and power; language as social action; and other topics. Students carry out investigations based on models from their reading, as well as responding to the theoretical approaches of the field. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6307 - Contemporary Perspectives in Archaeology (3 Credits)

Explores contemporary theoretical methodological perspectives in archaeology. Structured to proceed from a survey of the history of archaeological thought based on recent retrospectives, to an analysis of works reflecting current perspectives and directions. Topics include: archaeological interpretation, classical versus scientific archaeology, versus culture-history, functionalist and materialist paradigms, ethno-archaeological and text-based studies, neo-evolutionism, interactionist models, Marxist perspectives, processual theory. Note: this course assumes that students have completed undergraduate coursework in archaeology. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6317 - Archaeological Research Design and Analysis (3 Credits)

Examines the methods and techniques used in archaeology, including theory-building, hypothesis testing and middle range theory. Core materials emphasize the learning and critique of basic archaeological assumptions and the methods and theories used to scrutinize the collection and interpretation of data. Topics include chronometric applications and paleo-environmental reconstruction. Note: this course assumes that students have completed ANTH 6307 or equivalent. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6503 - Biological Anthropology Core: The Fossil Record (3 Credits)

Examines the historical development and modern practice of biological anthropology, including the theoretical and methodological foundations of this field. Emphasis is placed on the evidence for human and non-human primate evolution and the processes that influenced this evolution. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6513 - Biological Anthropology Core: Modern Human Variation (3 Credits)

Considers the theory and methods used in investigations of biological variation in contemporary human populations. This includes the biological and cultural sources responsible for creating and maintaining contemporary variation as well as their functional consequences.

Methods of research design and how to write a grant and scientific articles are considered. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6520 - Seminar: Selected Topics in Physical Anthropology (3 Credits)

A flexible seminar format for dealing with topics of special interest in physical anthropology on an advanced graduate level. Topics vary from semester to semester. Examples include: anthropology of nutrition, paleoecology, primate evolution, field experience in paleontology, advanced osteology and advanced human ecology. Note: This course assumes that students have completed undergraduate work in biological/physical anthropology. Prereq: Restricted to Graduate and Graduate Non-Degree students. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6840 - Independent Study: ANTH (1-3 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

ANTH 6950 - Master's Thesis (1-6 Credits)

Term offered: fall, spring, summer. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Anthropology, MA

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

The unique intellectual challenge of anthropology is to integrate knowledge from many disciplines for a global understanding of cultural and biological diversity in the past and the present. Individual courses in cultural anthropology, biological anthropology and archaeology cut across lines of the humanities, social sciences and natural sciences. Because of this integrative perspective on the human condition, and the training provided in objectively assessing cultural patterning and social interaction, an advanced degree in anthropology provides a versatile base for career development.

Students in our terminal Master's program have the benefit of receiving the faculty's full attention. Our program is unique in several respects. First, for students wishing to find employment after their MA, the department offers a mentorship program (<https://clas.ucdenver.edu/anthropology/programs/master-arts-anthropology/mentorship-program/>) that pairs them with alumni who have forged careers in students' fields of interest. Second, our program also offers students a range of opportunities for professional development (<https://clas.ucdenver.edu/anthropology/programs/master-arts-anthropology/career-opportunities/>) that are unusual in programs that focus on PhD students. For students considering the possibility of doctoral-level work in anthropology, the department has an excellent record in placing students in top-tier graduate programs. Students with residency in 14 states are eligible for in-state tuition, and funding opportunities (<https://clas.ucdenver.edu/anthropology/programs/master-arts-anthropology/funding-opportunities/>) in the form of Teaching Assistantships and graduate fellowships are available to students on a competitive basis. MA students may pursue the thesis or non-thesis option.

The University of Colorado Denver Department of Anthropology provides outstanding graduate education in anthropology, giving students a broad yet thorough grounding in the four subfields of anthropology as well as specialized instruction in one or more of a number of research orientations and/or geographic area concentrations. These orientations encompass the areas of research and application in which department faculty have substantial expertise.

These degree requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Some students may benefit from adding a specific skills-based certificate program onto their graduate program. For example: archeology students may wish to gain expertise in Geographic Information Systems through the GIS certificate (p. 309) offered through the Department of Geography and Environmental Sciences, while medical anthropology students may benefit from the certificate in public health offered through the School of Public Health. Graduate-level courses in certificate programs can often fulfill elective requirements in the anthropology program.

One doctoral program at the CU Denver campus that may be of particular interest to graduates of the anthropology MA program is the PhD in Health and Behavioral Sciences (p. 315). It is highly interdisciplinary and a natural extension of a master's degree in medical anthropology.

Please click [here](#) (p. 235) to see Anthropology department information.

Program Requirements

1. Students must complete a minimum of 30-36 credits.
2. Students must complete a minimum of 30-36 credits at the graduate level.
3. Students must earn a minimum grade of B (3.0) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. All credits for the degree must be completed with CU Denver faculty. A maximum of 12 credits of relevant graduate work may be transferred from another university with the program director's approval.
5. Students must comply with all Graduate School Policies and Procedures (p. 59)

Program Restrictions, Allowances and Recommendations

1. The Graduate School on the Downtown Campus allows up to five years to complete a master's degree, but students are strongly discouraged from spending more than four years. While it is possible to finish the MA in two years, most of our students work part-time, which limits the time they can dedicate to the program; most finish within three years.
2. All students are required to pass a written comprehensive examination, taken after core course work has been completed.
3. Thesis track students must complete a minimum of 30 total credits and non-thesis track students must complete a minimum of 36 credits.

Your graduate anthropology education begins by taking ANTH 5810 Integrating Anthropology plus two core courses each from two subdisciplines of Anthropology. After completing this core, you will select from among the specialized elective courses in the research concentrations described in more detail below. You will work closely with an advisor in selecting the range of courses appropriate both to a problem orientation and to your career objectives.

Required Core Courses

Code	Title	Hours
<i>Take the following</i>		6
ANTH 5810	Integrating Anthropology (required during fall term of first year)	3
ANTH 5053	Quantitative Methods in Anthropology	3

Required Core Sets

Code	Title	Hours
Choose two of the following sets of core courses. Students are not required to take these courses sequentially.		12
<i>Archaeology</i>		
ANTH 6307 & ANTH 6317	Contemporary Perspectives in Archaeology and Archaeological Research Design and Analysis	6
<i>Biological</i>		
ANTH 6503 & ANTH 6513	Biological Anthropology Core: The Fossil Record and Biological Anthropology Core: Modern Human Variation	6
<i>Cultural</i>		

ANTH 6103 & ANTH 6063	Current Theory in Ethnography and Qualitative Research Design and Methods	6

Electives

You will round out your program by selecting from the diverse range of courses offered in the department according to your particular interests in anthropology, your career goals and your plans for future graduate study. You may take courses in one or more concentrations. The courses listed are suggestions only; you must work closely with your advisor in constructing your particular program of study.

Code	Title	Hours
As part of the MA degree, students take up to 18 credits of elective 12-18 courses.		
Students choose courses from the following research concentration areas, according to their interests and plan of study.		
Students who opt to complete the non-thesis option will complete 18 credits of courses from the lists below.		18
Students completing a thesis will complete a combination of coursework and thesis credits.		12
ANTH 6950	Master's Thesis	

Medical Anthropology

Our MA program in cultural anthropology offers a unique focus on Medical Anthropology. Medical anthropology is a subdiscipline of anthropology that includes the study of all aspects of health, illness and disease in human communities and populations. It draws on all of the perspectives that distinguish anthropology as a unique discipline: the analysis of human evolution and adaptation; cultural development, expressions, and variability; and historical change and continuity. Medical anthropology takes as its subject a broad range of specific topics, including the study of health care systems, factors that affect the distribution and determinants of disease in populations, maternal and child health, nutrition and food habits, human development, political ecology, health policy, health disparities, community-driven wellness practices, visual storytelling, social media designed to promote health equities, and language and communication in health care contexts.

Faculty members take a variety of theoretical approaches to the topic, but our program is distinguished by its applied and engaged perspectives. A particular strength of our program is its integration of theoretical knowledge with community- and field-based training opportunities and challenges. We prepare students for careers in nonprofit and community groups, non-governmental organizations, advocacy, public health, health care institutions, and health sciences research; our graduates also attend doctoral programs at selective institutions. Courses in the department are complemented by electives in other departments (sociology, biology, psychology, history, geography, political science) and programs on the CU Denver campus (public affairs, education, health administration) and at the Anschutz Medical Campus (Schools of Medicine, Public Health, Pharmacy and Nursing).

Code	Title	Hours
ANTH 5000	Special Topics in Anthropology	
ANTH 5014	Medical Anthropology: Global Health	
ANTH 5060	Evolutionary Medicine	
ANTH 5080	Global Health Practice	
ANTH 5290	Anthropology and Public Health	
ANTH 5300	Migrant Health	

ANTH 5350	Anthropology of Globalization	
ANTH 5600	Medical Anthropology	
ANTH 5800	Special Topics in Medical Anthropology	
ANTH 5200	Gender in Cross-Cultural Perspective	
Total Hours		0

Note: Students are encouraged to take elective courses in GIS mapping (geography), ecology (biology/anthropology), public policy, public health, epidemiology and biostatistics as it is relevant to their course of study.

Archaeology

The archaeological studies program concentrates on the study of past human societies using archaeological data collected in field and museum settings. While a quantitative and scientific approach is emphasized, the theoretical perspectives employed draw heavily from political economy and cultural ecology. The department offers a variety of theoretical, methodological and area courses, which may be supplemented by others in the geography and environmental sciences and history departments. Internships are available in local museums and historic preservation offices in the Denver metropolitan area.

Code	Title	Hours
Courses		
ANTH 5121	Zooarchaeology	3
ANTH 5320	Archaeology of Mexico and Central America	3
ANTH 5330	Lithic Analysis	3
ANTH 5380	Archaeology of Hunters-Gatherers	3
ANTH 5400	Archaeology of Power and Inequality	3
ANTH 5440	Museums in the 21st Century	3
ANTH 5570	Landscape Archaeology	3
ANTH 5580	Neanderthals and the Origin of Modern Humans	3
ANTH 5910	Field Experience in Archaeology	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5080	Introduction to GIS	3
GEOG 5220	Environmental Impact Assessment	3
HIST 5232	Historic Preservation	3
HIST 5234	History at Work: Public and Community History	3

Biological Anthropology

The biological anthropology concentration is concerned with modern human biological diversity and the past evolutionary history that has led to such diversity. Students in this concentration develop a firm understanding of the evolutionary processes that lead to physical and behavioral variation in humans and nonhuman primates. The concentration also emphasizes the theoretical and quantitative methods used to explore and explain this variation. Students may take courses in diverse areas including evolutionary biology, genetics, ecology, ethnobiology, epidemiology, nutrition, medical anthropology, paleoanthropology, paleontology and primatology. Because biological anthropology is multidisciplinary in nature, students are encouraged to consider courses offered outside the department.

Code	Title	Hours
Courses		
ANTH 5014	Medical Anthropology: Global Health	3
ANTH 5121	Zooarchaeology	3

ANTH 5500	Advanced Issues in Human Evolution	3
ANTH 5550	Primate Comparative Anatomy	3
ANTH 5560	Human Ecology	3
ANTH 5580	Neanderthals and the Origin of Modern Humans	3
ANTH 5640	Darwinian Approach to Human Behavior	3
BIOL 5134	Human Genetics	3
BIOL 5494	Population and Evolutionary Genetics	3
HBSC 7031	Human Ecology and Environmental Adaptation	3
HBSC 7310	Environmental Epidemiology	3

Thesis Option

Students pursuing the thesis option must develop a topic and research proposal that specifies their plans in the semester after their completion of 18 credit hours.

A thesis is characterized by three factors: it is based in a research question or problem; it involves original research; there is a fully developed research proposal. A thesis can also encompass a range of format alternatives to the traditional thesis (e.g. article submitted for publication to a peer-reviewed journal, or a video production, internship or museum exhibit, each generally accompanied by a companion paper developing a theoretical or problem-oriented question).

The thesis is a major requirement for those in the MA in anthropology thesis track. The thesis should demonstrate the student's ability to apply knowledge and skills gained from the anthropology department's curriculum. A desirable goal for an excellent thesis would be a work of sufficient rigor and quality that it could be considered for publication. Original data collection ("fieldwork") is recommended but not required for the thesis. Analysis of secondary data—whether quantitative, qualitative, visual or other formats—is perfectly acceptable as long as the research is informed by a clearly articulated research question and under-girded by a research proposal.

The traditional thesis is a single document that often incorporates a literature review, definition of a problem, discussion of methods to address the problem, the subsequent research activity and results. However, the student may design a thesis with different emphases, in consultation with their advisor. For example, the goal may instead be a more compact paper submitted to a peer-reviewed journal. Other thesis plans may combine some research activity such as a video production, museum exhibit or an internship, with an accompanying paper.

The thesis must be defended before a committee of three faculty, at least two of whom need to be on the Department of Anthropology faculty (which includes senior instructors and research faculty). The structure of the thesis is largely determined by the Graduate School Policies and Procedures (p. 59); i.e., a thesis must conform to the rules.

- For the thesis, students must prepare a full research proposal which must be approved by their thesis chair before beginning their research. This proposal must be completed by the semester after the student has completed 18 credit hours. Sections of the proposal should include, at a minimum:
 - Introduction and statement of the problem: Should include a one sentence statement of the problem on the first page, and a discussion of its significance (i.e., why is it important that this topic be researched).
 - Literature review covering theoretical and topical material.
 - Research design and methods including a data analysis plan. Note: Wenner-Gren and National Science Foundation

both provide good models and templates for the research proposal. Those in the medical anthropology track might want to consider following the NIH model, depending the nature of their research questions and career goals.

- All students proposing to work with humans or data on modern humans must apply for and receive approval from the Human Subjects Research Committee before they begin their research. Note: most of the material for the application will be drawn from the research proposal.
- The draft thesis must be reviewed and approved as "defensible" by the student's thesis committee faculty chair before a thesis defense date can be set. Defensible means the chair has reviewed the draft and suggested changes have been made.
 - The draft sent to the student's committee must be substantively complete: All references must be in the text and properly formatted in a references cited section; there should be no "track changes" comments in the text; the text should be formatted according to Graduate School requirements.
 - Given the complexity of faculty and student schedules, consultation on a defense date should be done as far in advance as possible.
 - There must be a minimum of three weeks between the agreed-upon date for the defense and distribution of the draft thesis defined as defensible by the student's chair. If you would like feedback from your committee members before the defense, you should plan to distribute the thesis at least 4 weeks before the defense date. Note: If you intend to graduate the same semester you defend your thesis, you must schedule, successfully defend, and complete all recommended changes in accordance with CU Denver thesis and dissertation guidelines (http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/anthropology/anthropology-ma/GS_thesis_and_dissertation_format-guide.pdf). This effectively translates to having the thesis completed and "defensible" before the middle of the semester.

Non-Thesis Option

This track is defined by additional course work in lieu of a thesis. The decision to pursue the non-thesis option should be made by the semester following the completion of 18 credit hours.

The non-thesis option allows students to pursue their own educational goals through the selection of additional courses that fit their interests. We strongly encourage students who choose this option to consider an internship position arranged around an area of expertise or the development of a skill-set. The internship may be in a governmental agency or non-governmental organization in Colorado, the U.S. or internationally. Successful completion of an internship will be acknowledged on the transcript of the MA program.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/anthropology/graduate-learning-outcomes/>).

Chemistry

Chair: Haobin Wang
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Telephone: 303-315-7634

Fax: 303-315-7633

Website: clas.ucdenver.edu/chemistry/ (<http://clas.ucdenver.edu/chemistry/>)

Overview

Chemistry is the study of matter and its transformations, from the smallest scale - atoms and subatomic particles - to the macromolecules that provide structure and function to living organisms. Chemistry is often called the "central science" because it touches on other STEM disciplines including physics, biology, medicine, environmental science, geology, mathematics, materials science, technology, and many others. A degree in Chemistry can prepare you for a wide range of meaningful careers discovering and applying scientific knowledge. Modern chemistry combines computer modeling and experimental observation using procedures that are much safer and more environment-friendly than in past generations. Learning chemistry also teaches you important critical thinking skills that can be valuable in any career. Students with MS degrees have job opportunities in research and technical laboratory services. In addition, flexible programs can be designed to combine chemical knowledge and skills with other interests of the MS-level student (i.e. biology or environmental science).

Graduate Program

The MS degree offered at CU Denver is a broad-based chemistry degree that allows students to take courses and do research in the following basic fields: analytical, biochemistry, inorganic, organic, physical or environmental chemistry.

The MS program is available to both full- and part-time students. The chemistry faculty strives to ensure that students receive excellent advising and supervision of work. Students enrolled in the program have an opportunity to be appointed as laboratory teaching assistants. Research activities on the part of the chemistry faculty provide opportunities for graduate students to obtain research assistantships.

Admission Requirements

Applicants must meet the Downtown Campus Graduate School admission requirements according to Graduate School Policies and Procedures in addition to the following requirements of the Department of Chemistry:

An undergraduate major in Chemistry or a closely related discipline is required, including two semesters of organic chemistry as well as training in analytical chemistry, physical chemistry, and inorganic chemistry. Students missing more than one of these courses may be limited in the tracks that they are eligible to select. Students missing more than one of these courses may be provided a provisional admission. An undergraduate GPA of 3.0 (on a 4 point scale) is desired although each application is considered on its own merits.

- The GRE examination is recommended but not required.
- International students have additional admission requirements concerning immigration status, proof of financial responsibility and acceptable TOEFL or IELTS scores or completion of the CU Denver English as a Second Language Academy.
- Students currently in a BS program at CU Denver or elsewhere may want to consider the Chemistry BS/MS. This option includes the opportunity to enroll in graduate classes before enrolling in the MS program at CU Denver. At least 20 credits must be earned on campus. However, for the remaining courses, enrollment through CU ONLINE

or on one of the other CU campuses is possible. Furthermore, the Chemistry Master's Program accepts transfer credits from accredited Universities with approval from the Graduate Program Director.

Programs

- Chemistry, MS (p. 247)

Faculty

Professors:

Robert Damrauer, PhD, Massachusetts Institute of Technology

David Engelke, PhD, Washington University (St. Louis)

Doris Kimbrough, PhD, Cornell University

Hai Lin, PhD, University of Science and Technology of China

Scott Reed, PhD, University of Oregon

Haobin Wang, PhD, Wayne State University

Xiaotai Wang, PhD, University of Virginia

Associate Professors:

Jefferson Knight, PhD, Yale University

Yong Liu, PhD, University of Michigan

Xiaojun Ren, PhD, Jilin University

Marino Resendiz, PhD, University of California, Los Angeles

Liliya Vugmeyer, PhD, State University of New York at Stony Brook

Assistant Professors:

John (Nick) Fisk, PhD, University of Wisconsin, Madison

Emilie Guidez, PhD, Iowa State University

Jung-Jae Lee, PhD, University of Notre Dame

Clinical Associate Professors:

Marta Maron, PhD, University of Colorado

Clinical Assistant Professor:

Priscilla Burrow Crocker, PhD, University of Colorado

Instructors:

Vanessa Fishback, PhD, University of Northern Colorado

Kyoung Kim, PhD, University of Notre Dame

Chemistry (CHEM) Courses

CHEM 5010 - Advanced Inorganic Chemistry (3 Credits)

Covers the fundamental principles of inorganic chemistry. Topics include atomic structure and periodicity, molecular symmetry, bonding, structural chemistry, main-group chemistry, coordination chemistry, and organometallic chemistry. Prerequisite knowledge in Undergraduate Inorganic and Physical Chemistry assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4010. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5073 - RM-MSMSP Research Experience for Teachers - Chemistry Cohort (1-6 Credits)

The Research Experience for Teachers (RET) program will be a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max Hours: 6 Credits.

Grading Basis: Letter Grade

CHEM 5110 - Advanced Analytical Chemistry (3 Credits)

Explores the fundamental principles of analytical chemistry. Topics will focus on meteorology (the science of making measurements), measurements based on energy transfer (e.g. spectroscopic analysis), and measurements based on mass transfer (e.g. chemical separations and electrochemistry). Requisite knowledge in Undergraduate Instrumental Analysis is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4110. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5221 - Practical Applications of Spectroscopy (3 Credits)

This course surveys spectroscopic methods in order to deduce the structure of organic compounds from an examination of spectra, with an emphasis on infrared spectroscopy, mass spectrometry, nuclear magnetic resonance spectroscopy, and ultraviolet spectroscopy. Students will be introduced to a wide array of powerful and elegant tools for obtaining qualitative information about the structure of matter. This course will require a good amount of thought, yet all of the concepts and associated mathematical manipulations are within the reach of a student who has met the prerequisites. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4221. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5310 - Advanced Organic Chemistry (3 Credits)

An exploration of structure, bonding and reactivity in organic modules that includes extensive analysis of the chemical literature, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry and Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4310. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5421 - Cannabis Chemistry (3 Credits)

An exploration of the terpene to cannabinoid compounds including biosynthesis pathways; human receptor structures and mechanism; current analytical methods for Quality Assurance and Quality Control and current research in medical applications. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4421. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5510 - Computational Chemistry (3 Credits)

Classical and ab initio molecular dynamics are covered from theory to application. Students have access to high-performance computational resources and cover current topics in the field. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4510. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

Typically Offered: Fall.

CHEM 5530 - Advanced Physical Chemistry (3 Credits)

Explores fundamental properties of molecules (bond length and strength, the potential energy surface, reaction rates, etc.) and examines how these properties are measured, using original literature as the primary source, and culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5550 - Applications of Group Theory in Chemistry (3 Credits)

Introduces the basic principles of the group theoretical method as well as its applications in organic, inorganic, and physical chemistry. Covers Mo's for main-group and transition metal compounds, ligand field theory, molecular vibrations, and electron absorption spectroscopy. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5600 - Graduate Topics in Chemistry (1-3 Credits)

Graduate students in chemistry or a related discipline explore a special topic in chemistry or biochemistry. A description of topics to be covered in the current semester is maintained on the Chemistry department website. Restriction: Restricted to degree-granting Graduate programs. Term offered: spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to degree-granting graduate programs

CHEM 5610 - Understanding & Presenting Chemical Research (1-2 Credits)

This course will improve your ability to systematically search for chemical information, help you interpret the information you find, & improve your ability to summarize and present that information. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4610.

Term offered: fall, spring. Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

CHEM 5630 - Programming for Data Analysis in the Physical Sciences (1 Credit)

This course will be taught using live coding format (the instructor will code live in the classroom with the students). In this course, you will learn to process data using python scripts that you will write. Data include for example absorption spectra, protein pdb files, coordinate files. You will also learn how to use Python libraries and write functions (for example to create high resolution graphs). Finally, you will learn best coding practices, how to keep track of different versions of your code and share your code using Github. Restriction: Restricted to students enrolled degree-granting graduate programs. Cross-listed with CHEM 4630. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5655 - Teaching Assistant Bootcamp (1 Credit)

This course is 4-5 8-hour days of intensive training in suitable pedagogy for general chemistry and organic chemistry laboratory classes, procedures for teaching laboratory sections, and laboratory techniques. Students must have a teaching assistant contract with the Chemistry Department in order to take this course. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4655. Term offered: fall. Repeatable. Repeatable. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

CHEM 5700 - Environmental Chemistry (3 Credits)

A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil and air environments. Requisite knowledge in Undergraduate Organic and Analytical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4700. Term offered: spring. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5810 - Graduate Biochemistry I (4 Credits)

Topics include proteins, mechanisms and kinetics of enzymes, carbohydrates, lipids and membranes, nucleic acids, genetic engineering, signaling pathways, and energetics, which are integrated with critical analysis of recent journal papers, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5815 - Structural Biology of Neurodegenerative Diseases (3 Credits)

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 5815. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5825 - Biochemistry of Metabolic Disease (3 Credits)

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, BIOL 4825, and BIOL 5825. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5830 - Graduate Biochemistry II (4 Credits)

Topics include biosynthesis & metabolism of carbohydrates, lipids & amino acids, & genetic information flow of DNA replication, transcription, translation & regulation of transcription, which are integrated with critical analysis of recent literature, culminating in written & seminar presentations of individual projects. Continuation of 5810. Prereq: CHEM 5810 with a B- or higher. Restriction: Restricted to degree-granting Graduate programs or permission of instructor. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 5810 with a B- or higher Restriction: Restricted to degree-granting Graduate programs

Typically Offered: Spring.

CHEM 5835 - Biochemistry of Gene Regulation and Cancer (3 Credits)

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4835, BIOL 4835, and BIOL 5835. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 5845 - Molecular Modeling and Drug Design (3 Credits)

Advanced course in biochemistry. An introductory course on modern molecular modeling techniques and their applications to computer-aided rational drug design. Restriction: Graduate standing. Cross-listed with CHEM 4845. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5860 - Bioinorganic Chemistry: Bioinorganic compounds in medicine (3 Credits)

Explore the roles of metals in biochemistry and medicine by studying chemical/physical properties of metal coordinated compounds. The course focus on metal coordination resulting biopolymer folding and the function of macromolecules that is involved into iron cytochromes, zinc and copper enzymes, iron sulfur proteins, oxygen transport, iron storage, electron transfer, inorganic model compounds, metals in medicine, and toxicity of inorganic species. Topic is extended to biomedical application such as chemotherapy. Prereq: CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher. Cross-listed with CHEM 4860. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 3810 or 4810 or 5810 with a C- or higher

CHEM 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CHEM 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CHEM 6000 - Chemistry Seminar (1-3 Credits)

Faculty and student presentations of CU-Denver research projects and other current chemistry topics. Note: All chemistry students are encouraged to attend, but credit is given only to those who present seminars. Prerequisite knowledge in Undergraduate Physical or Environmental Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6001 - Master's Research Seminar (1 Credit)

Students present a formal seminar to the department describing their master's research work. Note: Required for all students completing a thesis-based master's degree; optional for those completing master's projects. Prerequisite: CHEM 6000 with a B- or higher. Term offered: fall, spring, summer. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prerequisite: CHEM 6000 with a B- or higher

CHEM 6002 - Chemistry Seminar I (1 Credit)

The art of listening to and giving a chemistry seminar. Introduces the chemical literature, the pedagogical techniques of seminar giving, and the critical thinking skills required to understand a technical presentation.

Note: Seminar presentations by faculty, outside speakers, and advanced graduate students are analyzed by the students participating in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6003 - Chemistry Seminar II (1 Credit)

Students prepare and give a chemical seminar based on a literature paper. Note: Seminar presentations by students and outside speakers are analyzed by students in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6840 - Independent Study: CHEM (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CHEM 6960 - Master's Report (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

Chemistry, MS

Graduate School (p. 59) Policies and Procedures (p. 59) apply to this program.

Program Director: Scott Reed

Email: Scott.Reed@ucdenver.edu

Office: SI 4131

Phone: 303-315-7644

Introduction

The MS program in chemistry focuses on providing students with the skills and knowledge necessary to conduct specialized research in preparation for careers in chemistry and related disciplines. Completing an MS in Chemistry at CU Denver can provide valuable experience that can help students land a job in the pharmaceutical, biotechnological, or other industry or can serve as a stepping stone for admission to a competitive PhD or health sciences program. Our faculty serve as mentors and advisors and assist students on the path to a more satisfying career in science. Prospective students are encouraged to contact the Graduate Program Director visit the Department of Chemistry website for additional details concerning the chemistry program, admission procedures, financial assistance and faculty research interests.

Completing an MS in Chemistry - Graduation Requirements

All Chemistry MS students must meet the following requirements for graduation:

- Students must complete a total of 30 credits. A minimum of 20 semester hours must be earned in formal lecture courses in the Department of Chemistry. Additional credits can be acquired through research, internships, thesis work, independent study, transfer credits, etc. within the department and in other departments. Course selections outside of the department must be approved by the Graduate Program Director.
- A cumulative GPA of 3.0 or better at the time of graduation
- A grade of B- (2.7) or better in all courses to be counted toward the degree.
- Compliance with all Graduate School Policies and Procedures (p. 59)
- Every student must select a thesis or non-thesis plan. As most of the requirements overlap, a student may switch between these plans with permission from the Graduate Program Director.
- In addition to choosing a plan, every student must select a content emphasis track. Each track has separate placement examinations, therefore switching between tracks requires approval from the Graduate Program Director.
- Although degrees can be completed in as little as one year, all work must be completed within five years after enrolling in the first graduate class in the department unless an exception is granted by the program director.
- Students are eligible to apply for a research assistantship or a teaching assistantship positions. Students who are interested in improving teaching skills can enroll in CHEM 5655 Teaching Assistant Bootcamp. This course is required for all students who are interested in working as a teaching assistant in the department.

Plan I-Thesis

Plan I is a research oriented program involving a minimum of 30 semester hours with the following requirements:

- Successful completion of a content emphasis track.
- An acceptable formal thesis consistent with the Graduate School Policies and Procedures.
- Successful oral defense of the master's thesis before a committee of at least three Regular Graduate Faculty, two of whom must be tenure track faculty members and have an appointment with the Graduate School through the Department of Chemistry.
- Completion of a high quality research project suitable for publication in a peer-reviewed journal.

Required courses

Code	Title	Hours
<i>Complete all of the following</i>		
CHEM 5610	Understanding & Presenting Chemical Research ¹	1
CHEM 6950	Master's Thesis	3
Total Hours		4

¹ CHEM 5610 Understanding & Presenting Chemical Research must be completed no later than the semester before students defend their thesis.

Content Emphasis Tracks

Code	Title	Hours
<i>Complete the coursework for one of the following content emphasis tracks</i>		

Biochemistry (p. 248)
Synthesis and Measurement (p. 249)
Molecular Modeling (p. 249)
Traditional Chemistry (p. 249)

Plan II- Coursework

Plan II is a coursework oriented program involving a minimum of 30 semester hours with the following requirements:

- All Plan II students are required to take a final written examination about primary research articles in their discipline. This exam may be taken any semester after 20 semester hours of graduate course work have been completed. Students may attempt the exam once per semester a maximum of three times and must be registered during the semester that they attempt the final examination.
- All non-thesis students are encouraged to take 1 credit of CHEM 5610 Understanding & Presenting Chemical Research
- Plan II students may arrange for an internship at a local company that employs Chemists and take up to 6 credits of CHEM 5939 Internship must be in good academic standing and have completed 6 graduate semester hours at CU Denver before starting an internship. Approval of the graduate program director is required prior to selecting an internship and enrolling for credit.

Content Emphasis Tracks

Code	Title	Hours
<i>Complete the coursework for one of the following content emphasis tracks</i>		
	Biochemistry (p. 248)	
	Synthesis and Measurement (p. 249)	
	Molecular Modeling (p. 249)	
	Traditional Chemistry (p. 249)	

Content Emphasis Tracks Biochemistry

Understanding of biochemical principles governing metabolic diseases, cancer and neurodegenerative diseases.

Code	Title	Hours
Required Courses		
CHEM 5810	Graduate Biochemistry I	4
CHEM 5310	Advanced Organic Chemistry	3
	or CHEM 5530 Advanced Physical Chemistry	
Elective Courses		
Select two of the following:		6
CHEM 5600	Graduate Topics in Chemistry ¹	
CHEM 5815	Structural Biology of Neurodegenerative Diseases	
CHEM 5825	Biochemistry of Metabolic Disease	
CHEM 5830	Graduate Biochemistry II	
CHEM 5835	Biochemistry of Gene Regulation and Cancer	
CHEM 5845	Molecular Modeling and Drug Design	
CHEM 5860	Bioinorganic Chemistry: Bioinorganic compounds in medicine	
Total Hours		13

¹ Course topic must match to the topic area of the track and be preapproved by the Graduate Program Director

CHEM 5310 Advanced Organic Chemistry or CHEM 5530 Advanced Physical Chemistry may be taken as electives, if not used as a required course above.

Synthesis and Measurement

Students in this track will learn how to prepare and characterize molecules and materials and how to measure their properties.

Code	Title	Hours
Required Courses		
CHEM 5010	Advanced Inorganic Chemistry	3
or CHEM 5310	Advanced Organic Chemistry	
CHEM 5110	Advanced Analytical Chemistry	3
or CHEM 5221	Practical Applications of Spectroscopy	
Elective Courses		
Select two of the following:		6
CHEM 5421	Cannabis Chemistry	
CHEM 5510	Computational Chemistry	
CHEM 5530	Advanced Physical Chemistry	
CHEM 5600	Graduate Topics in Chemistry ¹	
CHEM 5700	Environmental Chemistry	
CHEM 5810	Graduate Biochemistry I	
CHEM 5815	Structural Biology of Neurodegenerative Diseases	
CHEM 5845	Molecular Modeling and Drug Design	
BIOE 5420	Special Topics in Bioengineering ²	
Total Hours		12

¹ course topic must match to the topic area of the track and be preapproved by the Graduate Program Director

² course topic must be preapproved by the Graduate Director

CHEM 5010 Advanced Inorganic Chemistry, CHEM 5110 Advanced Analytical Chemistry, CHEM 5221 Practical Applications of Spectroscopy or CHEM 5310 Advanced Organic Chemistry may be taken as electives if not used as a required course above.

Molecular Modeling

Students in this track will learn fundamental principles and modern techniques in computer modeling and apply the acquired knowledge to solve practical problems in chemistry, biochemistry, biophysics, and material sciences.

Code	Title	Hours
Required Courses		
CHEM 5510	Computational Chemistry	3
CHEM 5530	Advanced Physical Chemistry	3
Electives		
Select two of the following:		6-7
CHEM 5010	Advanced Inorganic Chemistry	
CHEM 5310	Advanced Organic Chemistry	
CHEM 5845	Molecular Modeling and Drug Design	
CHEM 5600	Graduate Topics in Chemistry ¹	
CHEM 5815	Structural Biology of Neurodegenerative Diseases	

CHEM 5810	Graduate Biochemistry I	
Total Hours		12-13

¹ course topic must match to the topic area of the track and be preapproved by the Graduate Program Director

Additionally, students are recommended to take one or two courses from other departments:

Code	Title	Hours
MATH 3191	Applied Linear Algebra	3
MATH 4387	Applied Regression Analysis	3
MATH 5310	Probability	3
MATH 5387	Applied Regression Analysis	3
MATH 5660	Numerical Analysis I	3
CSCI 1410	Fundamentals of Computing	3
CSCI 2312	Object Oriented Programming	3
CSCI 4650	Numerical Analysis I	3
CSCI 5660	Numerical Analysis I	3

Traditional Chemistry

Students that are interested in gaining experience in a broad range of chemistry including the critical sub-disciplines of organic, inorganic, analytical, and physical chemistry are encouraged to consider the traditional track.

Code	Title	Hours
CHEM 5010	Advanced Inorganic Chemistry	3
CHEM 5110	Advanced Analytical Chemistry	3
CHEM 5310	Advanced Organic Chemistry	3
CHEM 5530	Advanced Physical Chemistry	3
Total Hours		12

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/chemistry/graduate-students/program-learning-goals/>).

CLAS Interdisciplinary Certificates

- Digital Studies Certificate (p. 249)

Digital Studies Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

From social media and mobile phones to the algorithms in self-driving cars, digital and information technologies are everywhere. The Digital Studies Certificate provides both degree-seeking and non-degree-seeking post-baccalaureate students with the opportunity to investigate the relationships between new communication technologies and society and to develop skills creating digital media messages and products. Students who attend any CU Denver school or college, or others who have BA degrees in any discipline are welcome.

Social sciences and humanities students can use this certificate to develop and demonstrate their technical skills, while science and

engineering students can use it to build expertise in understanding the social and cultural aspects of new technologies.

Degree-seeking graduate students, or non-degree seeking post-baccalaureate students

Students who earn the Digital Studies Certificate will be able to demonstrate to a wide range of potential employers or graduate schools that they have both technical skills and the ability to critically analyze new media.

Students who successfully complete the Digital Studies Certificate will be able to:

- Describe and analyze the relationships between digital media and their cultural, social, political, and ethical contexts
- Use digital media to communicate messages to a variety of audiences
- Use digital media to solve problems in a range of disciplines and situations
- Use digital media and related analytical skills as career-building tools

Program Delivery

- This is a hybrid program, with courses on-campus and online.

Admissions and Declaring this Certificate

- **Eligibility:** CU Denver graduate students in any discipline can enroll in the program at any point in their graduate studies. Non-degree-seeking students with who have a bachelor's degree in any discipline are welcome to apply.
- The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program.
- CLAS's Interdisciplinary Studies program sponsors the certificate, and the CLAS Director of Digital Initiatives will provide advising and administrative management.
- Any student wishing to declare the Digital Studies Certificate should schedule a certificate advising appointment with the CLAS Director of Digital Initiatives in order to register their intent to pursue it and to develop a curriculum plan.
- **Application Procedures:** Students enrolled in any CU Denver graduate program are encouraged to apply for the Digital Studies Certificate at any point in their studies. To apply, students in degree programs should print and complete a Digital Studies Certificate Application and submit it to the CLAS Director of Digital Initiatives. Non-degree-seeking students should also submit an official transcript from their undergraduate programs.
- Students who are not already enrolled at CU Denver must also complete an online Application for Non-Degree Admission prior to registering for courses.

General Requirements

- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements

1. Students must complete a minimum of 12 credit hours of required courses chosen from the approved courses in each cluster. 1 course

(3 credits) from each of the 3 clusters (for a total of 9 credits), plus the remaining 3 credits from any one of the three clusters.

2. Students must complete a minimum of 9 graduate level (5000 or above) credit hours in approved coursework.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. Students must complete all credits applied to the certificate with CU Denver faculty.

Digital Studies Certificate Course Clusters

- **Theory and Analysis:** Courses in this cluster focus on theorizing, explaining, and describing the relationships between digital, media, and communication technologies and society. They enable students to critically assess and analyze digital media and information, such as understanding the biases in seemingly neutral Google search results or examining how people use Twitter to build social movements
- **Digital Media Production:** Courses in this cluster focus on developing hands-on skills in the use of digital, media, and communication technologies. They provide opportunities for students to develop their skills with a variety of digital tools, such as digital photography, mapping, and social media management.
- **Integration:** Courses in this cluster bring together both understanding and using digital, media, and communication technologies.

Other courses may apply to each cluster with the approval of the Director of Digital Initiatives certificate advisor.

Theory and Analysis Cluster

Code	Title	Hours
<i>Take one</i>		3
BUSN 6610	Information Systems Strategy	3
COMM 4760	New Media and Society	3
ENGL 5165	Literacy and Technology	3
ENTP 6022	Digital Strategy for Entrepreneurs	3
INTE 5320	Games and Learning	3
ISMG 6180	Information Systems Strategy	3
PHIL 4920	Philosophy of Media and Technology	3

Digital Media Production Cluster

Code	Title	Hours
<i>Take one</i>		3
GEOG 5080	Introduction to GIS	3
GEOG 5081	Cartography and Computer Mapping	3
INTE 5340	Learning with Digital Stories	3
INTE 5680	Producing Media for Learning	3
IWKS 5170	3D Design, Computation and Prototyping	3
IWKS 5350	Computational Foundations of Innovation	3

Integration Cluster

Code	Title	Hours
<i>Take one</i>		3
COMM 4558	Digital Health Narratives	3

ENGL 4190	Advanced Topics in Writing & Digital Studies	3
HIST 5260	Introduction to Digital Studies	3
INTE 5665	Learning with Social Media and Networking	3
INTE 5711	Creative Designs for Instructional Materials	3
IWKS 5700	Innovation and Society	3
IWKS 5180	Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping	1-3
IWKS 5200	Data Science for Innovators	3
PUAD 4003	Effective Communication for Public Service	3

Elective

Code	Title	Hours
<i>Take one additional course from any one of the three course clusters.</i>		3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/digital-studies-certificates/graduate-certificate/>).

Communication

Chair: Lisa B. Keränen

Graduate Director: Amy Hasinoff

Program Assistant: Michelle A. Médal

Internship Director: Megan Hurson

Office: Student Commons Building, 1201 Larimer Street, 3rd Floor, Room 3014

Telephone: 303-315-1919

Overview

Our vibrant community of scholars and teachers is committed to providing a real-world, hands-on, and theoretically robust master's degree that will enrich students' communication knowledge and skills for the twenty-first century. Our program is a 33-credit generalist degree designed to enhance students' intellectual and professional growth through the understanding and practice of effective communication. Our faculty members are nationally and internationally recognized leaders in their field. Students who complete our program often receive offers to top-notch PhD programs or accept positions related to communication management, public relations, human relations, and corporate and non-profit communication.

Graduate Program

Click here (p. 255) to learn about the **Master of Arts in Communication**.

Grade Requirements

Students must maintain a GPA of 3.0 or higher across all courses applied to a graduate degree or to a graduate certificate.

Course Transfer Policy

A maximum of 12 semester hours of relevant graduate course work may be transferred from another university. Students cannot receive credit for transferred courses in which less than a B grade was earned. Course work transferred from another university must be approved by the director of the MA program and must not have been used for another graduate degree.

Time Limits for Completion of Degree

Students have seven years from the date of the beginning of their course work to complete all requirements for a master's degree in communication.

Graduate Certificate

Click here (p. 256) to learn about the Strategic Communication Graduate Certificate.

Grade and Residency Requirements for Certificates

A grade of *B* or better must be earned in each course completed as part of the certificate (*B-* is not acceptable). All semester hours for a certificate must be earned at CU Denver.

For more information about admission requirements please visit our website (<https://clas.ucdenver.edu/communication/programs/master-arts/admissions/>).

Application Procedures for U.S. Citizens

Students must submit the following materials to apply for admission to the MA program:

- letter of application explaining career plans and reasons for interest in the degree
- online graduate admission application
- three letters of recommendation, preferably from university faculty (those writing the recommendations must use the request for recommendation form and their own letterhead stationery)
- official transcripts from every college or university attended
- preferred 3.25 undergraduate GPA
- resume or vita
- academic writing sample (showing ability to make and sustain an argumentative analysis)
- Optional GRE scores
- \$50 application fee (nonrefundable)
- international students need TOEFL scores

Deadlines for Application

February 15: Priority deadline for fall semester start and full consideration for Graduate Teaching Assistantships (GTA). Applications will be considered until May 1, which is the non-priority deadline for fall semester start and excludes GTA consideration.

October 1: Deadline for spring semester start. Graduate Teaching Assistantships are generally not offered for spring semester start.

All application materials not uploaded through the online application process should be sent to:

Graduate School

University of Colorado Denver
Campus Box 163
1380 Lawrence Street, Suite 1250
P.O. Box 173364
Denver, CO 80217-3364

Students are notified by e-mail of the graduate admission committee's decision concerning their admission.

Application Procedures for International Students

Students who are not U.S. citizens should begin the process of application to the MA program in Communication by contacting the Office of International Affairs (website: www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/Pages/default.aspx (<http://www.ucdenver.edu/academics/InternationalPrograms/OIA/admissions/Pages/default.aspx>)) at CU Denver. This office will assist students in compiling their application materials, which then are submitted to the Communication department. See the International Students (p. 44) chapter for further information.

Programs

- Communication, MA (p. 255)
- Strategic Communication Graduate Certificate (p. 256)

Faculty

Professors:

Sarah Fields, PhD, University of Iowa

Stephen J. Hartnett, PhD, University of California at San Diego

Associate Professors:

Hamilton Bean, PhD, University of Colorado at Boulder

Larry Erbert, PhD, University of Iowa

Amy Hasinoff, PhD, University of Illinois at Urbana-Champaign

Lisa B. Keränen, PhD, University of Pittsburgh

Associate Professor Clinical Track:

Patrick Shaou-Whea Dodge, PhD, University of Denver

Xiyuan Liu, PhD, University of Illinois at Chicago

Assistant Professors:

Soumia Bardhan, PhD, University of New Mexico

Catalina M. de Onis, PhD, Indiana University

Mia Fischer, PhD, University of Minnesota

Senior Instructors:

Kristy Frie, MA, Regis University

Yvette Bueno Olson, PhD, University of Miami

e. j. Yoder, PhD, University of Denver

Instructors:

Megan Hurson, PhD, University of Colorado Boulder

Diann Logan, MA, University of Colorado Denver

James McNeil, MA, University of Colorado Denver

Ali Nassiri, MA, University of Colorado Denver

Tamara Powell, PhD, University of California San Diego

Emeritus:

Brenda J. Allen, PhD, Howard University

Sonja K. Foss, PhD, Northwestern University

James F. Stratman, PhD, Carnegie-Mellon University

Barbara J. Walkosz, PhD, University of Arizona

Communication (COMM) Courses

COMM 5000 - Communication and Sport (3 Credits)

Examines the language and imagery used in sporting discourse.

Considers how sports reflect and refract culture, both positively and negatively. Cross-list COMM 4000. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5021 - Perspectives on Rhetoric (3 Credits)

Introduces major theories of rhetoric from classical through contemporary times, including the theories of Aristotle, Cicero, I. A. Richards, Kenneth Burke, Michel Foucault and Jurgen Habermas.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4021. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5040 - Communication, Prisons, and Social Justice (3 Credits)

Examines the U.S. prison-industrial complex and enables students to envision ways of reducing crime and improving democracy by engaging in community service. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 4040.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. COMM 2020 is recommended preparation for this course.

Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5051 - Advanced Strategic Communication (3 Credits)

Provides senior-level training in hands-on communication environments where targeted messaging seeks specific outcomes. All students complete projects for community group, media outlet or corporation they choose. Students will not receive credit for this class if they have already received credit for COMM 5640. Cross-listed with COMM 4051.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5152 - Religion & Communication (3 Credits)

This course focuses on the relational/coconstitutive dynamics between religion, culture, and communication and how that shapes the world in which people live; how the legacy of political religious conflict, in conjunction with international culture wars, instigate socio-cultural conflict and change; and how an in-depth study of the dynamics of religion, culture, and communication can improve intergroup/intercultural/international relations or even negotiation/conflict resolution processes. Students will develop capacity to critically analyze the socio-cultural and political implication of religious ideology (radical and moderate), ways in which these ideologies are performed and communicated, and their (students') agency/ability to contribute to intercultural/international understanding, conflict resolution, civic engagement, and/or social justice efforts. In addition, upon completion, students should be prepared to engage in complex conversations about the idea of religion, it's role and relevance in human lives, and recognize several commonalities and differences between their (students') and non-Western/other societies' worldviews, cultures, and communicative dynamics. We will engage these topics through multiple and diverse readings, examples from television, film, and social media, reflexive writing assignments, research and analytical activities, critical discussions, and experiential learning activities. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with COMM 4152, INTS 4152, RLST 4152, INTS 5152, and RLST 5152. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5221 - Research Methods: Qualitative (3 Credits)

Applies qualitative research methods to human communication practices, including the processes of designing qualitative studies, collecting data, analyzing and interpreting data, and reporting results. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4221. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5240 - Organizational Communication (3 Credits)

Addresses the relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Stresses functional workplace skills and practices. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4240. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5255 - Negotiations and Bargaining (3 Credits)

Designed to allow students to study theories and apply concepts that explain the influences of various forms of mediating, reducing, and/or resolving conflict among individuals, groups, organizations, nations and cultures. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4255. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5260 - Communication and Conflict (3 Credits)

Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4260. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5265 - Gender and Communication (3 Credits)

Examines gender as it is constructed, performed, evaluated, and negotiated through communication. Topics covered include the nature of gender, the gender binary, scientific research on gender, gender stories in popular culture, the process of crafting and performing gender stories, and responses to gender performances. Cross-listed with COMM 4265.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Undergraduates with senior standing may enroll with permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5270 - Intercultural Communication (3 Credits)

Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Term offered: fall, spring, summer. Cross-listed with COMM 4270 and INTB 6270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5282 - Environmental Communication (3 Credits)

Studies the communication processes involved in policies and practices affecting natural and human environments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4282. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5430 - Communication, China, & the US (3 Credits)

This course provides a senior-level opportunity to study how China & the USA have spoken about and to each other, from the Opium War through the Cyber Wars, thus situating this nation in a world of globalizing communication. Note: this course fulfills the communication department's exit class requirement. This course may count for the International Studies major or minor. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4430. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5500 - Health Communication (3 Credits)

Examines the role of communication in a wide range of health contexts. Topics include cultural constructions of health and illness, public health communication campaigns, client-provider interactions, telemedicine, community-based health programs and medical journalism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4500. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5550 - Rhetorics of Medicine & Health (3 Credits)

This senior seminar/bridge class investigates persuasion in contemporary medicine/health care from clinical settings through mass media. Case studies explore contagion, health policy, the body, death, and biopower. The course requires extensive discussion of readings and an original research project. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with COMM 4550. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5558 - Digital Health Narratives (3 Credits)

This course blends readings, discussions and activities about health narratives with digital media production skills to teach students how to create compelling digital stories about health-related topics. Cross-listed with COMM 4558. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5575 - Designing Health Messages (3 Credits)

Examines the roles of communication in the design and impact of health messages/campaigns. We will design and assess health communication messages/campaigns in a participatory, process-oriented way using varied communication tools. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with COMM 4575. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5601 - You Are What You Eat: Food as Communication (3 Credits)

Because food provides a communication channel for much of who we are as individuals, as a community and as a society this course analyzes food as a form of communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4601. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5620 - Health Risk Communication (3 Credits)

Acquaints students with contemporary theory, research, and practice in health risk communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4620, ENVS 5620, and PBHL 4620. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5621 - Visual Communication (3 Credits)

Explores the social, cultural, and behavioral effects of visual images in a variety of contexts, including graffiti, film, advertising, art and architecture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4621. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5660 - Queer Media Studies (3 Credits)

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, WGST 4660, WGST 5660. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5665 - Principles of Advertising (3 Credits)

Provides a fundamental understanding and appreciation of advertising in today's global society, including consumer motivation, buying behavior, research, creative development and media planning. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4665. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5682 - Political Communication (3 Credits)

Examines the communication processes involved in mediated political events. Topics include the stages of the campaign process, media coverage of the political campaign process, and literacy skills needed to understand political advertising. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4682. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5720 - Dynamics of Global Communication (3 Credits)

Explores the word "global" in a communication context by analyzing the relationships between world media, international events, economics and the geopolitics of culture. This analysis is supported by the application of mass, human and cultural communication theory. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list COMM 4720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5760 - New Media and Society (3 Credits)

This course examines the relationship between new media (such as the internet and mobile phones) and society. Students will investigate the social and cultural aspects of communication technologies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4760. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

COMM 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COMM 5939 - Internship (1-6 Credits)

Applies communication or technical communication concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: fall, spring, summer. Max hours: 15 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6013 - Introduction to Graduate Work in Communication (3 Credits)

Designed to familiarize students with the philosophical, ideological, and methodological bases of study in communication. Note: Required of all graduate students in M.A. program in communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6200 - Communication and Critical Theory (3 Credits)

This course offers students an introduction to the intellectual history and current status of the relationship between communication and critical theory; canonical thinkers (Marx, Freud, Adorno, etc.) are coupled with contemporary communication scholars who work on questions of social justice. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6400 - Communication, Globalization and Social Justice (3 Credits)

This course offers students an introduction to the intersections of communication as a discipline, globalization as a world process, and social justice as a contested, ever-evolving goal of activists. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6700 - Thesis and Project Practicum (3 Credits)

Focuses on strategies of research design and writing for undergraduate students working on theses for Latin honors and for master's students seeking to complete a major research paper or thesis. Cross-listed with COMM 4700. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6710 - Topics in Communication (1-3 Credits)

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4710. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6711 - Topics in Communication (1-15 Credits)

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

COMM 6960 - Master's Project (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Communication, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Our vibrant community of scholars and teachers is committed to providing a real world, hands-on, and theoretically robust master's degree that will enrich students' communication knowledge and skills. Our program is a 33-credit generalist degree designed to enhance students' intellectual and professional growth through the understanding, analysis and practice of effective communication. Our faculty members are nationally and internationally recognized leaders in their fields, and our students hail from all over the world.

Some students who complete our program receive offers to top-notch PhD programs while others accept or continue in positions related

to communication management, strategic communication, public relations, media relations, human relations, and corporate and non-profit communications.

For more information please visit our website (<https://clas.ucdenver.edu/communication/programs/master-arts/>).

Program Requirements

1. Students must complete a minimum of 33 credits from approved courses.
2. Students must complete a minimum of 27 credits at the graduate level.
3. Students must earn a minimum grade of B (3.0) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. All credits for the degree must be completed with CU Denver faculty. A maximum of 12 credits of relevant graduate work may be transferred from another university with the program director's approval.
5. Students must comply with all Graduate School Policies and Procedures (p. 59)

Required Courses

Code	Title	Hours
Students must complete the following Research Methods and Introduction to Graduate Work courses the first semester they are available.		
COMM 5221	Research Methods: Qualitative	3
COMM 6013	Introduction to Graduate Work in Communication	3

Seminars

Code	Title	Hours
Students must take two graduate Communication seminars (6000-level or higher), in addition to the required COMM 6013 course. The optional COMM 6950 Master's Thesis or COMM 6960 Master's Project do not count as seminars.		
		6

Seminars are Communication courses at the 6000 level and are often special topics classes taught in faculty areas of expertise.

Electives

Code	Title	Hours
Students must complete seven elective courses.		
<i>All electives must be at the 5000 or 6000 level; however, 1 course (3 credits) is permitted at the 4000 level from outside the Communication department. A total of 6 credits may be outside the Communication department.</i>		
		21

Courses that count as electives include:

- Any Communication courses taken at the 5000 or 6000 level that do not fulfill another program requirement.
- Communication internships (max 6 credit hours)
- Communication independent studies (max 6 credit hours)

- Courses from outside the Communication department (max 6 credit hours; more with the approval of the student's advisor and the Director of Graduate Studies).
- Project or Thesis credit, if applicable. Students who choose to complete a project or thesis must register for between 3-6 semester hours of project or thesis work, which may substitute for one or two elective courses. Students who complete a project or thesis still complete a total of 33 credit hours.

Comprehensive examination

Code	Title	Hours
<i>All students must pass a comprehensive examination at the end of course work.</i>		

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/communication/programs/master-arts/communication-ma-learning-outcomes/>).

Strategic Communication Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

Strategic Communication has been defined as the management function that entails planning, research, publicity, promotion and collaborative decision-making to help any organization's ability to listen to, appreciate and respond appropriately to those persons and groups whose mutually beneficial relationships the organization needs to foster as it strives to achieve its mission and vision. The Graduate Certificate in Strategic Communication is designed to provide students with the principles and theories that guide the work of public relations practitioners in commercial, public and nonprofit contexts.

Non-degree students who enroll in the MA program following completion of the certificate may transfer up to 12 hours of credits earned for the certificate into credits for the MA degree. The certificate also is designed for students enrolled in a CU Denver's master's program, including the Department of Communication's MA program. For such students, the certificate can be completed as part of or in addition to the coursework required for the master's degree.

Recipients of the Undergraduate Certificate in Strategic Communication are ineligible to complete this certificate.

Application Procedures and Additional Information

- Students should declare interest in completing the Graduate Certificate in Strategic Communication by emailing Dr. Hamilton Bean at hamilton.bean@ucdenver.edu (hamilton.bean@ucdenver.edu).
- Before the end of their final semester, students must send a completed certificate application (<https://clas.ucdenver.edu/communication/certificates/>) to Dr. Hamilton Bean at hamilton.bean@ucdenver.edu (hamilton.bean@ucdenver.edu).
- The approved certificate will be mailed to the student, and recorded on their transcript, after final grades are posted for the semester.

- Students who are not already enrolled at CU Denver must also complete an online Application for Non-Degree Admission prior to registering for courses.

Additional information about the Graduate Certificate in Strategic Communication may be obtained from

Dr. Hamilton Bean
Department of Communication
Student Commons Building
1201 Larimer Street, Suite 3010
303-315-1909
Hamilton.Bean@ucdenver.edu

Certificate Requirements

1. Students must complete a minimum of 12 credits from approved courses.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All of the credit hours for the certificate must be earned from faculty at the University of Colorado Denver.

Required Courses

Code	Title	Hours
Complete the following		12
COMM 5051	Advanced Strategic Communication	3
COMM 5240	Organizational Communication	3
COMM 5939	Internship	1-6
An elective at the graduate level from the College of Arts & Media, School of Business, the School of Public Affairs, or the Anschutz Medical Campus. ¹		3

¹ The elective must be approved in consultation with the Department of Communication.

Students may be permitted to take courses other than those listed above to fulfill the requirements for the certificate if those courses fit their professional goals better. Requests for approval for substitute courses, including an explanation for the substitution, must be made in writing to Dr. Hamilton Bean.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/communication/strategic-communication-graduate-certificate-learning-outcomes/>).

Dual Degrees

Programs

- Economics MA/Applied Mathematics MS Dual Degree, with a Focus in Applied Statistics (p. 257)
- Economics MA/Finance MS Dual Degree (p. 259)
- Economics MA/Public Administration MPA Dual Degree (p. 260)

Economics MA/Applied Mathematics MS Dual Degree, with a Focus in Applied Statistics

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

Graduate Advisors: Brian Duncan and Hani Mansour

The fields of mathematics and economics are inextricably linked. In economics, mathematics and statistics are used extensively in theory construction, tests of existing theories and discovery of regularities to inform new theories. Economics also gives mathematicians/statisticians new challenges, new outlets and new ideas to incorporate in mathematics. These complementarities have long been recognized and economics graduate students have always been advised to take advanced courses in statistics.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MS in applied mathematics. Students interested in completing the dual degree in economics and applied mathematics must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the applied math program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Math Department.

Click here (p. 271) for admissions requirements for the MA program in Economics

Click here (p. 360) for admissions requirements for the MS program in Applied Mathematics

There are an increasing number of economics MA students wishing to obtain graduate training and a degree in statistics. Having an MA degree in economics and an MS degree in Applied Mathematics will make a student highly employable in the job market and provide them an edge in applying for elite PhD programs.

Degree Requirements

1. The requirements for the dual degree in economics and applied mathematics include completing 21 credit hours in ECON and 21 credit hours in MATH (42 total credit hours).
2. Students are expected to meet all course prerequisites. ECON 5803 Mathematical Economics is a prerequisite for ECON 5073 Microeconomic Theory and ECON 5813 Econometrics I. This prerequisite requirement is waived for students who are currently admitted to the MS Applied Mathematics program.
3. Students must complete all ECON and MATH credits at the graduate level (5000-level or higher).
4. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot

complete program or ancillary course requirements as pass/fail. No course may be taken more than twice.

5. Students must complete all coursework with CU Denver faculty.

Required Courses

Economics Core

Code	Title	Hours
<i>Take the following</i>		<i>18</i>
ECON 5073	Microeconomic Theory	3
ECON 5083	Macroeconomic Theory	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 6053	Seminar In Applied Economics	3
or ECON 6054	Seminar In Applied Economics II	
ECON 6073	Research Seminar	3

Economics Elective

Code	Title	Hours
<i>Take 3 credits of ECON at 5000 level or higher.</i>		<i>3</i>
ECON 5030	Data Analysis with SAS	3
ECON 5050	Special Economic Problems	1-8
ECON 5090	History of Economic Thought	3
ECON 5150	Economic Forecasting	3
ECON 5410	International Trade	3
ECON 5530	Economics of Natural Resources	3
ECON 5540	Environmental Economics	3
ECON 5660	Health Economics	3
ECON 5740	Industrial Organization	3
ECON 5800	Special Topics	1-3
ECON 5803	Mathematical Economics	3
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6060	Special Topics	1-3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3
ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

Mathematics Core

Code	Title	Hours
<i>Take the following courses:</i>		<i>18</i>
MATH 5070	Applied Analysis	3
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5718	Applied Linear Algebra	3
MATH 6330	Workshop in Statistical Consulting	3

MATH 5394	Experimental Designs	3
or MATH 6376	Statistical Computing	
or MATH 6380	Stochastic Processes	
or MATH 6384	Spatial Data Analysis	
or MATH 6388	Statistical and Machine Learning	
or MATH 7384	Mathematical Probability	
or MATH 7826	Topics in Probability and Statistics	

An additional course given prior approval by the student's advisor and the Director of the Program.

Mathematics Electives

Code	Title	Hours
<i>Take 3 credits of MATH at 5000 level or higher. ¹</i>		<i>3</i>
MATH 5010	History of Mathematics	3
MATH 5012	An Advanced Perspective on Number and Operation	2
MATH 5013	An Inquiry-based Approach to Geometry	1
MATH 5027	Topics in Applied Mathematics	3
MATH 5110	Theory of Numbers	3
MATH 5135	Functions of a Complex Variable	3
MATH 5337	Intro to Statistical and Machine Learning	3
MATH 5350	Mathematical Theory of Interest	3
MATH 5351	Actuarial Models	3
MATH 5387	Applied Regression Analysis	3
MATH 5388	Machine Learning Methods	3
MATH 5390	Game Theory	3
MATH 5394	Experimental Designs	3
MATH 5410	Modern Cryptology	3
MATH 5432	Computational Graph Theory	3
MATH 5446	Theory of Automata	3
MATH 5490	Network Flows	3
MATH 5576	Mathematical Foundations of Artificial Intelligence I	3
MATH 5593	Linear Programming	3
MATH 5610	Computational Biology	3
MATH 5660	Numerical Analysis I	3
MATH 5661	Numerical Analysis II	3
MATH 5674	Parallel Computing and Architectures	3
MATH 5733	Partial Differential Equations	3
MATH 5779	Math Clinic	3
MATH 5791	Continuous Modeling	3
MATH 5792	Probabilistic Modeling	3
MATH 5793	Discrete Math Modeling	3
MATH 5794	Optimization Modeling	3
MATH 5830	Applied Statistics	3
MATH 6023	Topics in Discrete Math	3
MATH 6101	Uncertainty Quantification	3
MATH 6131	Real Analysis	3
MATH 6360	Exploratory Data Analysis	3
MATH 6376	Statistical Computing	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3

MATH 6395	Multivariate Methods	3
MATH 6398	Calculus of Variations and Optimal Control	3
MATH 6404	Applied Graph Theory	3
MATH 6595	Nonlinear Programming	3
MATH 6653	Introduction to Finite Element Methods	3
MATH 6735	Continuum Mechanics	3
MATH 6960	Research Methods in Mathematics and Statistics	3
MATH 7101	Topology	3
MATH 7132	Functional Analysis	3
MATH 7376	Statistical Computing	3
MATH 7381	Mathematical Statistics I	3
MATH 7382	Mathematical Statistics II	3
MATH 7384	Mathematical Probability	3
MATH 7385	Stochastic Differential Equations	3
MATH 7386	Monte Carlo Methods	3
MATH 7393	Bayesian Statistics	3
MATH 7397	Nonparametric Statistics	3
MATH 7405	Advanced Graph Theory	3
MATH 7409	Applied Combinatorics	3
MATH 7410	Combinatorial Structures	3
MATH 7413	Modern Algebra I	3
MATH 7414	Modern Algebra II	3
MATH 7419	Mathematical Coding Theory	3
MATH 7421	Projective Geometry	3
MATH 7593	Advanced Linear Programming	3
MATH 7594	Integer Programming	3
MATH 7595	Advanced Nonlinear Programming	3
MATH 7663	Finite Difference Methods for Partial Differential Equations	3
MATH 7665	Numerical Linear Algebra	3
MATH 7667	Introduction to Approximation Theory	3
MATH 7821	Topics in Projective Geometry	3
MATH 7822	Topics in Linear Algebra	3
MATH 7823	Topics in Discrete Math	3
MATH 7824	Topics in Computational Mathematics	3
MATH 7825	Topics in Optimization	3
MATH 7826	Topics in Probability and Statistics	3
MATH 7827	Topics in Applied Mathematics	3
MATH 8660	Mathematical Foundations of Finite Element Methods	3
MATH 8664	Iterative Methods in Numerical Linear Algebra	3

¹ Except MATH 5000-5010, MATH 5017 Topics in Mathematics for Teachers and MATH 5198 Mathematics for Bioscientists. Contact a graduate advisor in the Math Department for information about Math course requirements.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/master-arts-economics/>).

To learn more about the Student Learning Outcomes for this program, please visit our website.

Economics MA/Finance MS Dual Degree

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Graduate Advisors: Brian Duncan and Hani Mansour

For students interested in combining the quantitative skills of an economics degree with the specific applications of a business degree, we offer an MA economics / MS finance dual degree. This 42-semester-hour program is offered jointly with the Business School.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MS in finance. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the finance program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the Business School.

Click here (p. 271) for admissions requirements for the MA program in Economics

Click here (p. 117) for admissions requirements for the MS program in Finance and Risk Management

The dual degree program is intended to create highly-skilled research professionals with considerable econometric skill as well as familiarity with their chosen financial institutions. Given the similarity in course work within the two programs, there can be considerable time savings for the student. Essentially, the program allows students to complete the two programs that separately would require 60 hours of course work with 42 hours of combined course work.

Program Requirements

1. The requirements for the dual degree in economics and finance include completing 21 credit hours in ECON and 21 credit hours in FNCE (42 total credit hours)
2. Students are expected to meet all course prerequisites.
3. Students must complete a minimum of 42 upper-division (5000-level) or higher ECON and FNCE credit hours.
4. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail. No course may be taken more than twice.
5. Students must complete all coursework with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Take the following</i>		<i>30</i>
ECON 5073	Microeconomic Theory	3
ECON 5083	Macroeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 6073	Research Seminar	3
BUSN 6640	Financial Management	3
FNCE 6300	Macroeconomics and Financial Markets	3
FNCE 6330	Investment Management Analysis	3
FNCE 6380	Futures and Options	3
or FNCE 6382	Survey of Financial Derivatives	
or FNCE 6410	Real Options and Decisions Under Uncertainty	

Electives

Economics

Code	Title	Hours
<i>Take three credits of ECON numbered 5000 or higher.¹</i>		<i>3</i>
ECON 5030	Data Analysis with SAS	3
ECON 5050	Special Economic Problems	3
ECON 5090	History of Economic Thought	3
ECON 5150	Economic Forecasting	3
ECON 5410	International Trade	3
ECON 5530	Economics of Natural Resources	3
ECON 5540	Environmental Economics	3
ECON 5660	Health Economics	3
ECON 5740	Industrial Organization	3
ECON 5800	Special Topics	3
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6053	Seminar In Applied Economics	1.5
ECON 6054	Seminar In Applied Economics II	1.5
ECON 6060	Special Topics	1-3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3
ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
ECON 6840	Independent Study	1-3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

¹ Students are strongly encouraged to take 3 elective hours of ECON 6053 Seminar In Applied Economics/ECON 6054 Seminar In Applied Economics II or to meet with an economics graduate advisor to discuss how to otherwise prepare for ECON 6073 Research Seminar. Contact a graduate advisor in the Economics Department for information about ECON course requirements.

Finance

Code	Title	Hours
<i>Take nine credits of 6000 or higher courses with a FNCE prefix¹</i>		<i>9</i>
FNCE 6310	Financial Decisions and Policies	3
FNCE 6340	Business Firm Valuation	3
FNCE 6350	Financial Innovations	3
FNCE 6360	Management of Financial Institutions	3
FNCE 6365	Banking Principles and Practices	3-9
FNCE 6370	International Financial Management	3
FNCE 6372	Time-Series Forecasting	3
FNCE 6380	Futures and Options	3
FNCE 6382	Survey of Financial Derivatives	3
FNCE 6410	Real Options and Decisions Under Uncertainty	3
FNCE 6411	International Corporate Governance	3
FNCE 6420	Mergers and Acquisitions	3
FNCE 6450	Short-Term Financial Management	3
FNCE 6460	Emerging Market Finance	3
FNCE 6470	Behavioral Finance	3
FNCE 6480	Financial Modeling	3
FNCE 6490	Commodity and Equity Trading	3
FNCE 6800	Special Topics	3
FNCE 6802	Foundations of Commodities	3

¹ Except FNCE 6290 Quantitative Methods for Finance. Contact a graduate advisor in the Business School for information about Finance course requirements.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/master-arts-economics/>).

To learn more about the Student Learning Outcomes for this program, please visit our website (https://business.ucdenver.edu/ms/finance-risk-mgmt/#careers_and_learning_outcomes-427).

Economics MA/Public Administration MPA Dual Degree

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Graduate Advisors: Brian Duncan and Hani Mansour

The fields of public administration and economics are inextricably linked. Economists provide much of the theory and analytic foundation that administrators use to evaluate and implement policy. Given that the capital of the state of Colorado is in Denver, there is great need for administrators that fully understand methods of program evaluation and have the theoretical background needed to forecast how individuals and institutions will respond to new proposals. Similarly, good theory and

practice must take into account how the proposals will be implemented and results interpreted. Both administrators and economists need to be engaged in constructive dialog for either to be fully effective.

A "dual" degree means that students who complete the program earn two master's degrees: MA in economics and MPA in public administration. Students interested in completing the dual degree in economics and public administration must apply separately to each program, meet the admission requirements of each program, and be accepted by each program. If one program accepts a student for the dual degree but the other program does not, then the student may not graduate under the dual degree program. Students may apply to both programs at the same time or apply to the economics program first, and then to the public administration program after their first semester, or vice versa. Both programs must be completed in the same semester to take advantage of the dual degree program. Further information about this program can be obtained from either the Department of Economics or the School of Public Affairs.

[Click here \(p. 271\)](#) or admissions requirements for the MA program in Economics

[Click here \(p. 505\)](#) for admissions requirements for the MPA program in Public Administration

Degree Requirements

1. The requirements for the dual degree in economics and public administration include completing 21 credit hours in ECON and 27 credit hours in PUAD (48 total credit hours).
2. Students are expected to meet all course prerequisites.
3. Students must complete a minimum of 48 graduate (5000-level) or higher ECON and PUAD credit hours.
4. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail. No course may be taken more than twice.
5. Students must complete all coursework with CU Denver faculty.

Required Courses

Economics Core

Code	Title	Hours
<i>Take the following</i>		<i>15</i>
ECON 5073	Microeconomic Theory	3
ECON 5083	Macroeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3

Public Administration Core

Code	Title	Hours
<i>Take the following</i>		<i>24</i>
PUAD 5001	Introduction to Public Administration and Public Service	3
PUAD 5002	Organizational Management and Behavior	3
PUAD 5003	Research and Analytic Methods	3
PUAD 5004	Economics and Public Finance	3

PUAD 5005	The Policy Process and Democracy	3
PUAD 5006	Public Service Leadership and Ethics	3
PUAD 5008	Evidence-Based Decision-Making	3
PUAD 5503	Public Budgeting and Finance	3

Electives

Economics

Code	Title	Hours
<i>Take three to six credits of ECON numbered 5000 or higher.¹</i>		<i>3-6</i>
ECON 5030	Data Analysis with SAS	3
ECON 5050	Special Economic Problems	3
ECON 5090	History of Economic Thought	3
ECON 5150	Economic Forecasting	3
ECON 5410	International Trade	3
ECON 5530	Economics of Natural Resources	3
ECON 5540	Environmental Economics	3
ECON 5660	Health Economics	3
ECON 5740	Industrial Organization	3
ECON 5800	Special Topics	3
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6053	Seminar In Applied Economics	1.5
ECON 6054	Seminar In Applied Economics II	1.5
ECON 6060	Special Topics	1-3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3
ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
ECON 6840	Independent Study	1-3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

¹ Students planning on taking ECON 6073 Research Seminar are strongly encouraged to take 3 elective hours of ECON 6053 Seminar In Applied Economics/ECON 6054 Seminar In Applied Economics II.

Public Administration

Code	Title	Hours
<i>Take six to nine credits of PUAD courses at 5000 or higher.¹</i>		<i>6-9</i>
PUAD 5007	Qualitative Research Methods	3
PUAD 5010	Rocky Mountain Program	3
PUAD 5030	Denver Community Leadership Forum	3
PUAD 5110	Seminar in Nonprofit Management	3
PUAD 5115	Effective Grant Writing for Nonprofit and Public Sector Managers	3
PUAD 5120	Nonprofits and Public Policy	3
PUAD 5125	Civil Society and Nongovernmental Organizations	3
PUAD 5130	Collaboration Across Sectors	3

PUAD 5140	Nonprofit Financial Management	3
PUAD 5145	Philanthropy	3
PUAD 5150	Fundraising & Financial Resource Development	3
PUAD 5160	Nonprofit Boards and Executive Leadership	3
PUAD 5170	Strategic Management for Nonprofit and Public Managers	3
PUAD 5180	Social Entrepreneurship	3
PUAD 5190	Comparative Nonprofit Sector Development	3
PUAD 5200	Education Policy	3
PUAD 5210	Education Finance	3
PUAD 5220	Human Resource Management	3
PUAD 5230	Education Systems Leadership	3
PUAD 5250	Intergovernmental Management	3
PUAD 5260	Managing Diversity	3
PUAD 5271	Managing Conflict and Change	3
PUAD 5280	American Public Service Environment	3
PUAD 5290	Comparative Public Administration for International Students	3
PUAD 5310	Policy Formulation & Implementation	3
PUAD 5320	Public Policy Analysis	3
PUAD 5325	Public Private Partnerships	3
PUAD 5330	Intermediate Statistical Analysis	3
PUAD 5350	Program Evaluation	3
PUAD 5370	Media and Public Policy	3
PUAD 5380	Citizen Participation: Theory and Practice	3
PUAD 5410	Administrative Law	3
PUAD 5420	Law and Public Policy	3
PUAD 5440	Negotiation and Conflict Resolution	3
PUAD 5455	Environmental and All-Hazards Management Law	3
PUAD 5460	Political Advocacy	3
PUAD 5501	Contemporary Issues in Revenue and Tax Administration and Policy	3
PUAD 5502	Public Financial Management and Policy	3
PUAD 5503	Public Budgeting and Finance	3
PUAD 5540	Organization Development	3
PUAD 5615	Health Policy	3
PUAD 5625	Local Government Management	3
PUAD 5626	Local Government Politics and Policy	3
PUAD 5628	Social Problems and Policies	3
PUAD 5630	Economic Development	3
PUAD 5631	Seminar in Environmental Politics and Policy	3
PUAD 5632	Seminar in Environmental Management	3
PUAD 5638	Colorado Politics, Policy, and Administration	3
PUAD 5644	Environmental and Hazards Law	3
PUAD 5650	Public Service in Emergency Management and Homeland Security	3
PUAD 5655	Principles of Emergency Management	3
PUAD 5710	Public Sector Technology	3
PUAD 5720	Public Policies for Hazards and Disasters	3
PUAD 5740	Sustainable Energy Policy	3
PUAD 5910	Nature and Scope of Interpersonal Violence	3
PUAD 5920	The Psychology of Interpersonal Violence	3
PUAD 5930	Interpersonal Violence Law and Policy	3

PUAD 5940	Interpersonal Violence Leadership, Advocacy, and Social Change	3
PUAD 5960	Interpersonal Violence and Health Care	3
PUAD 5961	Interpersonal Violence, Health Advocacy and Systems Change	3
PUAD 6600	Special Topics: Public Administration	1-6
PUAD 6650	Professional Topics in Public Service	1-3
PUAD 6700	Community-Based Field Experience and Seminar	3
PUAD 7007	Qualitative Research Methods	3
PUAD 7010	Advanced Seminar in International Public Policy	3
PUAD 8010	Historical and Comparative Foundations of Public Administration	3
PUAD 8020	Seminar in Public Management	3
PUAD 8030	Seminar in Public Policy	3
PUAD 8040	Seminar In Economic and Institutional Foundations of Public Affairs	3
PUAD 8050	Quantitative Methods I	3
PUAD 8060	Seminar On The Conduct Of Empirical Inquiry	3
PUAD 8070	Quantitative Methods II	3

¹ Contact a graduate SPA advisor for information about their course requirements.

Capstone

Code	Title	Hours
<i>Take one of the following</i> ¹		3
ECON 6073 or PUAD 5361	Research Seminar Capstone Seminar	3

¹ If the student takes ECON 6073 Research Seminar, then 3 hours of elective credits must come from Economics and 9 from SPA. If the student takes PUAD 5361 Capstone Seminar, then 6 hours of elective credits must come from Economics and 6 from SPA.

To learn more about the Student Learning Outcomes for the Economics program, please visit our website (<https://clas.ucdenver.edu/economics/programs/master-arts-economics/>).

To learn more about the Student Learning Outcomes for the Public Administration program, please visit our website (<https://publicaffairs.ucdenver.edu/programs/public-affairs-programs/master-of-public-administration/>).

Economics

Chair: Brian Duncan

Program Assistant: Christine Lukvec

Office: Lawrence Street Center, LW-470

Telephone: 303-315-2030

Website: econ.ucdenver.edu/home/ (<http://econ.ucdenver.edu/home/>)

Overview

Economics is the science of decision making. The rigorous and general approach that characterizes economics lends itself to a remarkably wide field of practical application. Economists are noted for major contributions in a number of fields including government policy, taxation, law, regulation, political economy, international trade and finance, international and U.S. development, marketing, environmental studies,

medical policy, portfolio management and banking. The broad and rigorous training of economics majors accounts for their significant demand in virtually every industry and government agency. Economics provides excellent preparation for advanced graduate study as well. Recent studies indicate that economics is a preferred degree for prestigious MBA programs and law schools.

Graduate Program

The Department of Economics offers an MA program in Economics and MS and Ph.D. programs in Health Economics. The MA program in Economics trains students in quantitative and applied economic skills and is directed toward two groups:

1. those who look on the MA as a key to career development in business or government service, and
2. those who desire to go on to pursue the PhD in economics or related fields.

The strong quantitative emphasis of the department's MA program is ideally suited for the pursuit of both these goals. Our graduates are sought out by energy companies, defense contractors, health care agencies, consulting firms, financial institutions, and other companies looking for employees who know how to use real-world data to answer research questions. Many of our graduates use their MA degree in economics at CU Denver as a springboard towards pursuing a Ph.D. degree in economics at highly ranked programs across the country.

The MS and Ph.D. programs in Health Economics are designed to train scientists to engage in modern economic research related to questions pertinent to health policy, health behaviors, and health care services. Both programs are collaborative among faculty in the Department of Economics (ECON), housed in the College of Liberal Arts and Sciences, and the Department of Health Systems, Management & Policy (HSMP), housed in the Colorado School of Public Health. The ECON coursework grounds students in rigorous economic theory and modern statistical methods, whereas the HSMP coursework connects students to institutional details of the health care sector, study design, quantitative methods, cost-effectiveness analysis, and grant writing. The Health Economics programs equip students with an applied interdisciplinary skill set that integrates creative knowledge with the technical expertise that is in demand in the health care industry, enhancing their career and professional development.

Health Economics, MS

Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 3.0 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).
- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and econometrics (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus. A course in linear algebra and/or differential equations is recommended).

- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. GRE scores are used in conjunction with other indicators of academic success at the Master's level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL, IELTS, or PTE Academic scores. The institution code for CU Denver is 4875. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), 6.5 (IELTS), or 51 (PTE). Minimum subscores also apply. More information about TOEFL, IELTS, or PTE waiver requirements can be found on the International Admission's website. Please contact the International Admissions office if you have questions about this requirement.

Application Deadlines

Fall: June 1 Spring: December 1

The Department of Economics accepts late applications after these official deadlines. However, there is no guarantee that a late application will be processed in time for the start of the semester. Students are encouraged to apply well in advance the application deadline.

International students who apply after the June 1 or December 1 deadline may not have time to obtain a student visa. Being admitted to the M.S. program in Health Economics does not guarantee that a student will receive a student visa in time for the start of the semester. International students who are admitted to the MS program, but fail to obtain a visa in time, may defer admission for up to one year. All questions about student visas should be directed to the Office of International Education.

Health Economics, PhD

Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 3.0 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).
- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and econometrics (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. GRE scores are used in conjunction with other indicators of academic success at the PhD level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL, IELTS, or PTE Academic scores. The institution code for CU Denver is 4875. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), 6.5 (IELTS), or 51 (PTE). Minimum

subscores also apply. More information about TOEFL, IELTS, or PTE waiver requirements can be found on the International Admission's website. Please contact the International Admissions (p. 44) office if you have questions about this requirement.

Application Deadlines: June 1

Students are encouraged to apply by February 1 for full consideration of financial aid. The final application deadline is June 1.

Economics, MA

Admission Requirements

- Meet all general admission requirements of the Graduate School (including a 2.50 undergraduate grade-point average).
- Submit three letters of recommendation (at least two letters should come from individuals who are familiar with your scholarly record. The third can be an additional academic reference or professional reference from someone who knows you well and can comment on your potential as a graduate student).
- Submit official transcripts from all colleges attended.
- Have completed 15 credit hours of undergraduate economics, including intermediate microeconomic theory and intermediate macroeconomic theory (upper division courses).
- Have completed courses in calculus and statistics (preferably a year of calculus and a course in econometrics or similar upper division statistics course. A course in linear algebra and/or differential equations is recommended).
- Submit GRE scores. All applicants, international and domestic, must submit GRE scores regardless of prior degrees, course work, or work experience. The institution code for CU Denver is 4875. Most students admitted to the MA program in economics score 154 or above (690 or above using the prior test scale) on the quantitative section of the GRE. However, this is not a minimum GRE cutoff score, nor is it a score above which admission is guaranteed. GRE scores are used in conjunction with other indicators of academic success at the Master's level. Applicants must show strong evidence of quantitative ability either through high grades in math, statistics, and economics courses, a high quant score on the GRE, or preferably both.
- International students must submit TOEFL scores. The minimum required score is 203 (computer-based TOEFL), 75 (IBT-based TOEFL), 537 (paper-based TOEFL), or 6.5 (IELTS). The institution code for CU Denver is 4875. The minimum TOEFL scores are a requirement of the Graduate School and cannot be waived by the department of economics. The Graduate School may waive the TOEFL requirement for applicants who have attended a college or university in the United States as a full-time student and have completed two semesters of academic work with a "B" average (3.0 GPA or higher). Please contact the International Admissions office if you have questions about this requirement.

Application Deadlines:

Fall - June 1

Spring - December 1

The Department of Economics accepts late applications after these official deadlines. However, there is no guarantee that a late application will be processed in time for the start of the semester. Students are encouraged to apply well in advance the application deadline.

International students who apply after the June 1 or December 1 deadline may not have time to obtain a student visa. Being admitted to the MA program in economics does not guarantee that a student will receive a student visa in time for the start of the semester. International students who are admitted to the MA program, but fail to obtain a visa in time, may defer admission for up to one year. All questions about student visas should be directed to the Office of International Admissions (p. 44).

Applied Econometrics and Data Analytics Graduate Certificate

Application Process

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form:
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

Additional Requirements

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking graduate student with a bachelor's degree.
- Students should have completed ECON 4811 Introduction to Econometrics or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

Health Economics and Outcomes Research Graduate Certificate

Application Process

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

Additional Requirements

- Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking student with a bachelor's degree.
- Have completed ECON 4811 Introduction to Econometrics or equivalent coursework, or have professional experience in statistical analysis.
- International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

Programs

- Health Economics, MS (p. 269)
- Health Economics, PhD (p. 270)
- Economics, MA (p. 271)
- Applied Econometrics and Data Analytics Graduate Certificate (p. 272)
- Health Economics and Outcomes Research Graduate Certificate (p. 273)

Faculty

Professors:

Laura M. Argys, PhD, University of Colorado Boulder
Brian J. Duncan, PhD, University of California at Santa Barbara
Daniel I. Rees, PhD, Cornell University
W. James Smith, PhD, University of Colorado Boulder
Buhong Zheng, PhD, West Virginia University

Associate Professors:

Andrew I. Friedson, PhD, Syracuse University
Hani Mansour, PhD, University of California at Santa Barbara

Assistant Professors:

Ryan P. Brown, PhD, Duke University
Chloe East, PhD, University of California Davis
Maulik Jagnani, PhD, Cornell University
Phillip Luck, PhD, University of California Davis
Andrea Velasquez, PhD, Duke University

Clinical Teaching Assistant Professors:

Enoch Cheng, PhD, University of California-Los Angeles
Ernest Boffy-Ramirez, PhD, University of California at Santa Barbara
Soojae Moon-Anderson, PhD, University of Colorado Boulder

Instructors:

Debbie Evercloud, PhD, University of Virginia
Nicholas Golding, MA, Ohio State University
Lawrence Hamelin, MA, University of Colorado Denver
Kyle J. Hurst, MA, Baylor University
Kyle Montanio, PhD, University of Rhode Island
George K. Quansah, MA, University of Colorado Denver
Yue Shen, PhD, Queen's University
Kawin Thamtanajit, PhD, University of Delaware
Chun-Chieh Hu, PhD, Syracuse University

Economics (ECON) Courses

ECON 5030 - Data Analysis with SAS (3 Credits)

Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications (ECON 3811) or a similar course is strongly recommended as preparation for this course. Cross-listed with ECON 4030. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall, Spring.

ECON 5050 - Special Economic Problems (1-8 Credits)

Provides students the opportunity to critically evaluate some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4050. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5073 - Microeconomic Theory (3 Credits)

Fundamental features of partial equilibrium theory of the firm, consumer and market. General equilibrium and welfare economic topics are examined. Features of the models that have empirical applications are accented. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5083 - Macroeconomic Theory (3 Credits)

Examines the major macroeconomic models within a common framework. Differences in the foundations, structure, and policy implications of the competing models are analyzed. Restriction:

Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5090 - History of Economic Thought (3 Credits)

Traces the development of economic thought from ancient times to the 20th century. Considers the context in which these ideas were developed and their relationship to modern economic thought and contemporary economic problems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Microeconomics (ECON 2022) and Macroeconomics (ECON 2012) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4090. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5150 - Economic Forecasting (3 Credits)

Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications (ECON 3811) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4150. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5410 - International Trade (3 Credits)

Trade theory identifies who wins and loses from trade and why there are usually overall gains. Explores issues in immigration, globalization, income inequality, tariffs, dumping, the WTO, the environment, wages and growth strategies among others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4410. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5530 - Economics of Natural Resources (3 Credits)

Examines economic models of renewable resource management and models of exhaustible resource depletion. Analyzes decisions made by private firms and governments affecting the methods and rate of resource development. Examines the effects of resource development on economic growth and environmental quality and the effects of economic development on resource scarcity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4530. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5540 - Environmental Economics (3 Credits)

Economic approach to environmental problems: relationship between ownership structures, externalities and environmental damage; poverty, population pressure, and environmental degradation; valuation of environmental amenities; sustainability of economic activity; cost-benefit analysis applied to the environment; evaluation of alternative instruments for environmental control. Prerequisite ECON 5073 with a B- or higher.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4540. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5660 - Health Economics (3 Credits)

Introduces students to analytical skills and economic methods, and demonstrates how these methods can be applied to issues in health policy and management. Topics include: demand for health and medical care; health care costs, health reform, medical technology; market for health insurance; physicians, hospitals, and managed care; pharmaceuticals; regulations in the U.S. health care sector; demand for addictive substances; infant and maternal health; international comparisons of health care systems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5740 - Industrial Organization (3 Credits)

Examines the determinants of, and linkages between, market structure, firm conduct, and industrial performance. Topics include: determinants of the market size; impact of different market structures on prices and outputs; strategic behavior of firms to prevent entry or induce exit of rival firms; collusion; price discrimination; advertising; competition, monopoly, and innovation; implications for economic efficiency and public policy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4740. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5800 - Special Topics (1-3 Credits)

Current economics topics to be determined by the instructor.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5803 - Mathematical Economics (3 Credits)

Introduces the use of mathematics in advanced micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations. Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll ECON 5803. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll in ECON 5803.

ECON 5813 - Econometrics I (3 Credits)

Theory and application of statistical techniques used to analyze economic problems. Topics include simple and multiple regression models, simultaneous equation models, and the problems encountered in their application. Students formulate models, obtain data, estimate models, interpret results and, forecast. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5823 - Econometrics II (3 Credits)

Second course in the econometrics sequence, covering intermediate topics in cross-section and time series analysis. Topics include limited dependent variables, autoregressive and distributed lag models, longitudinal data analysis and unit roots, co-integration and other time-series topics. Prereq: ECON 5813 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5813 with a B- or higher Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECON 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5950 - Master's Thesis (1-4 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

ECON 6010 - Advanced Microeconomic Theory (3 Credits)

Recent and contemporary literature on fundamentals of economic theory. Consideration of value theory with particular emphasis on methodology, theory of demand, theory of the firm, and theory of distribution. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 6020 - Advanced Macroeconomic Theory (3 Credits)

Considers general equilibrium and aggregative analysis in economic theory, with particular emphasis given to the theory of employment, consumption and investment. Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing

ECON 6053 - Seminar In Applied Economics (1.5 Credits)

Familiarizes students with applied research in economics. Students read, discuss, and critique articles in economic journals. Emphasis is placed on research design and methods employed in these articles to prepare students for development of their own research projects in subsequent courses. Topics vary with instructor, and may include international economics, labor economics, monetary theory, public or finance and development economics. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6054 - Seminar In Applied Economics II (1.5 Credits)

Familiarizes students with state-of-the-art applied economic research. Students read, discuss, and critique articles published in economic journals. Note: Topics vary with the instructor. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Term offered: spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6060 - Special Topics (1-3 Credits)

Special topics in advanced microeconomics. Consideration of value theory based upon methodology, theory of demand, and theory of distribution. Restriction: Restricted to students with Graduate standing. Introduction to Mathematical Economics (ECON 3801) or similar coursework is strongly recommended as preparation for this course. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ECON 6073 - Research Seminar (3 Credits)

Focuses on training students to do rigorous research in economics. Topics include the analysis of large data sets, further development of econometric skills, and writing a research paper. Note: Students attend lectures and also meet regularly with the instructor in the process of doing a sophisticated research project. ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing

ECON 6210 - Public Finance (3 Credits)

Advanced economic theory applied to the problems of public and private sector decision making. Applied topics in taxation, education, voting theory, welfare economics, externalities and public goods. Prereq: ECON 5073. Max hours: 3 Credits.
Grading Basis: Letter Grade

ECON 6410 - International Trade (3 Credits)

Contemporary and classical literature on theories of international trade. Topics include the determination of the pattern and terms of trade, the relationship between growth and trade, and commercial policy. Prereq: ECON 5073. Max hours: 3 Credits.
Grading Basis: Letter Grade

ECON 6420 - International Finance (3 Credits)

Topics in international finance, including exchange rate determination, the adjustment process, international financial markets and the international monetary system. Prereq: ECON 5073. Max hours: 3 Credits.
Grading Basis: Letter Grade

ECON 6610 - Labor Economics (3 Credits)

Advanced study of the labor market, including: history, nature, and function of labor organizations; the process of wage determination; and the formation of public policy. Prereq: ECON 5073 and 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6666 - The Economics of Health Behaviors (3 Credits)

This course teaches an economic approach to studying health behaviors and the policies that affect them. Special attention will be paid to analyzing the effects of excise taxes and to understanding the quasi experimental approach to doing applied research in economics. Prereq: ECON 5073 and ECON 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6770 - Economic Growth and Development (3 Credits)

Considers the role of planning in economic development, with particular reference to investigation of planning problems, especially in less developed countries. Prereq: ECON 5073 and 5803. Max hours: 3 Credits.
Grading Basis: Letter Grade

ECON 6801 - Advanced Mathematical Economics (3 Credits)

Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory. Prereq: ECON 5803 or permission of instructor. Max hours: 3 Credits.
Grading Basis: Letter Grade

ECON 6810 - Econometrics and Forecasting (3 Credits)

Covers advanced topics in cross-sectional and time-series analysis. Emphasizes important theoretical and empirical issues encountered in applied work in economics and business. Topics include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students learn to execute estimation and forecasting projects soundly. Prereq: ECON 5813 and 5823 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

ECON 7073 - Advanced Microeconomic Theory II (3 Credits)

This is a second-semester Ph.D. level course in microeconomics. The first semester course discussed consumer and producer theory; this course will discuss game theory, market equilibrium, and information economics. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 7661 - Health Economics I (3 Credits)

This is the first course in the Ph.D field sequence for Health Economics. The goal of this course is to familiarize you with the basic theory and empirical findings in the part of health economics which focuses on the market for medical care and the policy that surrounds it. Pre-req or co-req ECON 5823. Students must enroll in both courses concurrently or have completed ECON 5823 with a B- or better. Restricted to students with graduate standing. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 7662 - Health Economics II (3 Credits)

This course teaches an economic approach to studying the various policies that affect these risky health behaviors. The extensive economic literature on the causes and consequences of risky health behaviors will be studied. Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 8990 - Doctoral Dissertation (1-10 Credits)

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must be in the Health Economics PhD program and have permission from the instructor to be eligible for this course. Term offered: fall, spring. Repeatable. Max hours: 50 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 50.

Additional Information: Report as Full Time.

Health Economics, MS

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 262) to see Economics department information.

Introduction

Program Director: Brian Duncan, Ph.D.

Graduate Advisor: Daniel Rees, Ph.D.

The M.S. program in Health Economics provides graduate-level training in economics, specifically in the economics of the health care industry. Our M.S. program emphasizes extensive training in mathematical and quantitative analysis, including substantial exposure to applied econometrics, working with large and diverse data sets, and a wide range of statistical software. The M.S. in Health Economics builds off the strengths of the Economics Department, which is housed in the College of Liberal Arts and Sciences, and the Department of Health Systems, Management and Policy (HSMP), which is housed in the Colorado School of Public Health, allowing students to take courses on both the downtown Denver and Anschutz Medical campuses. The program gives students the applied skills that employers demand, provides those pursuing advanced degrees an edge in gaining admission to top-flight Ph.D. programs, enhancing the student's career and professional development.

Degree Requirements

1. Students must complete a minimum of 30 credit hours of coursework, of which 21 hours are core requirements. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or

ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.

4. Students must complete all credits for the degree with CU Denver/CU Anschutz faculty.

Required Courses

Code	Title	Hours
<i>Complete the following</i>		<i>21</i>
ECON 5073	Microeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

Electives

Code	Title	Hours
<i>Take nine credit hours in courses numbered 5000 or higher with an ECON or HSMP subject code. Courses numbered 6611 or higher with a BIOS subject code may be taken with the graduate advisor's approval.</i>		<i>9</i>
ECON 5030	Data Analysis with SAS	3
ECON 5050	Special Economic Problems	3
ECON 5083	Macroeconomic Theory	3
ECON 5090	History of Economic Thought	3
ECON 5150	Economic Forecasting	3
ECON 5410	International Trade	3
ECON 5530	Economics of Natural Resources	3
ECON 5540	Environmental Economics	3
ECON 5660	Health Economics	3
ECON 5740	Industrial Organization	3
ECON 5800	Special Topics	3
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6053	Seminar In Applied Economics	1.5
ECON 6054	Seminar In Applied Economics II	1.5
ECON 6060	Special Topics	3
ECON 6073	Research Seminar	3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3
ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
HSMP 6601	Introduction to HSMP	3
HSMP 6602	Health Equity	3
HSMP 6604	Health Care Economics	3
HSMP 6605	Health Policy	3
HSMP 6606	Public Health Administration	2
HSMP 6608	Ethical and Legal Issues in Public Health	2
HSMP 6609	Cost Benefit and Effectiveness in Health	2

HSMP 6610	Health Care Financial Management	3
HSMP 6613	Addressing Health Equity in Colorado's Safety Net	1
HSMP 6614	MCH Program Management & Policy Analysis	3
HSMP 6615	Current Global Health Policy Issues	2
HSMP 6616	Intro. to Health Policy Analysis and Communication	1
HSMP 6617	Interpreting Health Policy and Management Research	2
HSMP 6618	Comparative Health Systems	2
HSMP 6621	Interprofessional Education and Development I	1
HSMP 6622	Interprofessional Education and Development II	1
HSMP 6630	Grant Writing for Public Health Professionals	2
HSMP 6633	Management of Non-Profit Organizations in Public Health	2
HSMP 6634	Management, Budgeting and Public Health Administration	3
HSMP 6640	Leadership for Public Health Practice Part 2	3
HSMP 6650	MPH Research Paper	1-2
HSMP 6651	HSR Masters Research Paper	1-6
HSMP 6670	Special Topics: Health Systems, Management and Policy	1-3
HSMP 7010	Foundations in Health Services Research	1
HSMP 7601	Research Design and Proposal Preparation	3
HSMP 7605	Managing a Learning Healthcare System: Theory to Prac	3
HSMP 7607	Methods in Health Services Research I	3
HSMP 7609	Methods in Health Services Research II	3

Graduate Examination

Students must successfully complete a capstone project in which proficiency in the knowledge and skills comprising the MS degree in Health Economics is demonstrated.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/master-science-health-economics/>).

Health Economics, PhD

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here (p. 262) to see Economics department information.

Introduction

Program Director: Brian Duncan, Ph.D., Department of Economics

Program Co-Director: Richard Lindrooth, Ph.D., Health Systems, Management & Policy

Graduate Advisor: Daniel Rees, Ph.D., Department of Economics

The Ph.D. in Health Economics is designed to train scientists to engage in modern economic research related to questions pertinent to the health care sector and to personal and public health. Students take courses both from the Economics Department, which is housed in the College of Liberal Arts and Sciences, and from the Health Systems, Management & Policy (HSMP) Department, which is housed in the Colorado School of Public Health. The ECON coursework grounds students in rigorous economic theory and modern statistical methods, whereas the HSMP

coursework connects students to institutional details of the health care sector, administrative data methods, grant writing, and the development of interdisciplinary health care research.

Program Requirements

1. Students must complete a minimum of 76 credit hours, including 36 hours of core requirements, and a minimum of 30 dissertation credit hours. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver/ Anschutz faculty.

Required Courses

Code	Title	Hours
Take the following		36
ECON 5073	Microeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3
HSMP 6602	Health Equity	3
HSMP 6605	Health Policy	3
HSMP 6609	Cost Benefit and Effectiveness in Health	2
HSMP 7010	Foundations in Health Services Research (2 credits)	1
HSMP 7601	Research Design and Proposal Preparation	3
HSMP 7609	Methods in Health Services Research II	3

Electives

Code	Title	Hours
<i>Take 9 credit hours of elective credits</i>		9
Any course numbered 6000 or higher with an ECON or HSMP subject code. Courses numbered 6611 or higher with a BIOS subject code may be taken with the graduate advisor's approval.		
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6053	Seminar In Applied Economics	1.5
ECON 6054	Seminar In Applied Economics II	1.5
ECON 6060	Special Topics	1-3
ECON 6073	Research Seminar	3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3

ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
HSMP 6601	Introduction to HSMP	3
HSMP 6604	Health Care Economics	3
HSMP 6606	Public Health Administration	2
HSMP 6608	Ethical and Legal Issues in Public Health	2
HSMP 6610	Health Care Financial Management	3
HSMP 6613	Addressing Health Equity in Colorado's Safety Net	1
HSMP 6614	MCH Program Management & Policy Analysis	3
HSMP 6615	Current Global Health Policy Issues	2
HSMP 6616	Intro. to Health Policy Analysis and Communication	1
HSMP 6617	Interpreting Health Policy and Management Research	2
HSMP 6618	Comparative Health Systems	2
HSMP 6621	Interprofessional Education and Development I	1
HSMP 6622	Interprofessional Education and Development II	1
HSMP 6630	Grant Writing for Public Health Professionals	2
HSMP 6633	Management of Non-Profit Organizations in Public Health	2
HSMP 6634	Management, Budgeting and Public Health Administration	3
HSMP 6640	Leadership for Public Health Practice Part 2	3
HSMP 6670	Special Topics: Health Systems, Management and Policy	1-3
HSMP 7605	Managing a Learning Healthcare System: Theory to Prac	3
HSMP 7607	Methods in Health Services Research I	3

Preliminary Exam, Dissertation Proposal, and Dissertation

Students must successfully pass a preliminary examination covering topics in microeconomic theory, econometrics, and health economics by the start of their fourth semester coursework to ensure that they are qualified for doctoral study.

Ph.D. students must defend their dissertation proposal after completing or registering for all non-dissertation coursework and concurrent with applying for admission to candidacy. Students are advanced to candidacy for the Ph.D. once they have completed all required coursework and examinations, and have successfully presented their dissertation proposal to their dissertation committee.

After students are advanced to candidacy, they must complete a total of 30 hours of dissertation credits to complete the PhD. Each fall and spring semester, students are expected to register for a minimum of 5 semester hours of dissertation research; if unable to register for at least 5 semester hours, students must request a leave of absence from the PhD program until able to complete the minimum dissertation requirement. Students may take up to two semesters' leave of absence before they are unenrolled from the program. Students then would need to reapply to the program.

Each student must write and defend a dissertation containing original contributions and evidence of significant scholarship that the student's primary advisor and dissertation committee deem satisfactory.

Code	Title	Hours
<i>Complete a minimum of 30 dissertation credits.</i>		
ECON 8990	Doctoral Dissertation	1-10

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/phd-health-economics/>).

Economics, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 262) to see Economics department information.

Introduction

Graduate Advisors: Brian Duncan and Hani Mansour

The MA program in economics is designed to train students in the quantitative and applied economic skills that will best enhance their future employment opportunities in the private and public sectors, or their pursuit of PhD studies in economics or related fields.

Our MA program emphasizes extensive training in mathematical and quantitative analysis, including the provision of substantial exposure to applied econometrics, working with large and diverse data sets, and a wide range of statistical software. The program gives students the applied skills that employers demand, provides those pursuing advanced degrees an edge in gaining admission to top-flight PhD programs-and enhances the likelihood of the student's ultimate success.

Program Requirements

1. Students must complete a minimum of 30 credit hours of coursework, of which 21 hours are core requirements. Each student's plan will be worked out in conjunction with the graduate advisor. Students are expected to meet all course prerequisites.
2. Students must complete a minimum of 30 graduate (5000 and above) level credit hours.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail. No course may be taken more than twice and only one attempt will retain the credit.
4. Students must complete all credits for the degree with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Take the following</i>		21
ECON 5073	Microeconomic Theory	3
ECON 5083	Macroeconomic Theory	3
ECON 5803	Mathematical Economics	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 6053	Seminar In Applied Economics	3

or ECON 6054 Seminar In Applied Economics II

ECON 6073	Research Seminar	3

Electives

Code	Title	Hours
<i>Three courses numbered 5000 or higher with an ECON subject code.</i>		9
<i>After completing credit hours of ECON 6053 Seminar In Applied Economics/ECON 6054 Seminar In Applied Economics II as part of the economics core, additional ECON 6053 Seminar In Applied Economics/ECON 6054 Seminar In Applied Economics II courses may be counted as electives.</i>		
ECON 5030	Data Analysis with SAS	3
ECON 5050	Special Economic Problems	3
ECON 5090	History of Economic Thought	3
ECON 5150	Economic Forecasting	3
ECON 5410	International Trade	3
ECON 5530	Economics of Natural Resources	3
ECON 5540	Environmental Economics	3
ECON 5660	Health Economics	3
ECON 5740	Industrial Organization	3
ECON 5800	Special Topics	3
ECON 6010	Advanced Microeconomic Theory	3
ECON 6020	Advanced Macroeconomic Theory	3
ECON 6053	Seminar In Applied Economics	1.5
ECON 6054	Seminar In Applied Economics II	1.5
ECON 6060	Special Topics	1-3
ECON 6210	Public Finance	3
ECON 6410	International Trade	3
ECON 6420	International Finance	3
ECON 6610	Labor Economics	3
ECON 6666	The Economics of Health Behaviors	3
ECON 6770	Economic Growth and Development	3
ECON 6801	Advanced Mathematical Economics	3
ECON 6810	Econometrics and Forecasting	3
ECON 6840	Independent Study	1-3
ECON 7073	Advanced Microeconomic Theory II	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/master-arts-economics/>).

Applied Econometrics and Data Analytics Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 262) to see Economics department information.

Introduction

The Graduate Certificate in Applied Econometrics & Data Analytics provides students with a strong graduate-level foundation in modern applied econometrics and quantitative analysis. The unique analytic skill set delivered in this certificate is sought out by energy companies,

defense contractors, health care agencies, consulting firms, financial institutions and other companies in the Denver area that are looking for employees who know how to use real world data to answer research questions. Upon earning the certificate, students will be able to:

1. Explain the potential outcomes framework and how it informs empirical research.
2. Distinguish between causal and correlational relationships.
3. Set-up randomized experiments and understand factors that could contaminate them.
4. Identify natural experiments and how to apply them in research.
5. Understand the Difference-in-Difference estimator and its applications.
6. Apply matching techniques.
7. Use Panel data models, such as fixed effects estimators.
8. Understand the use of instrumental variables and how they are applied in research.
9. Apply the Regression Discontinuity estimator and apply it in economic research.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Delivery

- This is an on-campus program.

Admission Requirements

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

General Requirements

Click here (p. 59) for information about Academic Policies.

Certificate Requirements

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Certificate Restrictions, Allowances and Recommendations

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.
3. No course may be taken more than twice.

4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.
6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

Required Courses

Code	Title	Hours
<i>Complete all the following ECON courses:</i>		12
ECON 5030	Data Analysis with SAS	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ECON 6053 & ECON 6054	Seminar In Applied Economics and Seminar In Applied Economics II (3 credits total across ECON 6053 and 6054)	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/graduate-certificate-applied-econometrics-data-analytics/>).

Health Economics and Outcomes Research Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 262) to see Economics department information.

Introduction

Graduate Certificate in Health Economics & Outcomes Research is designed to train scientists to engage in modern economic research related to questions pertinent to health policy, health behaviors, and health care services. The unique analytic skill set delivered in this certificate is sought out health care agencies, state agencies, and consulting firms in the Denver area that are looking for employees who know how to use health data to answer research questions. Upon earning this certificate, students will:

1. Have sufficient knowledge of econometric theory and techniques to make them an effective consumer and producer of empirical research in health economics.
2. Understand the challenges in identifying causal relationships using health data.
3. Understand the fundamentals of the potential outcomes framework, randomized experiments, natural experiments, panel data models, matching, instrumental variables and regression discontinuity designs.
4. Understand the economic approach to studying the healthcare sector, health behaviors, and health outcomes.

5. Understand how different markets function in the health care sector, such as the market for health care, health insurance, health labor (such as physicians and nursing), and pharmaceuticals.

These certificate requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their certificate advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Delivery

- This is an on-campus program.

Admission Requirements

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

General Requirements

Click here (p. 59) for information about Academic Policies.

Certificate Requirements

1. Students must complete a minimum of 12 ECON credit hours.
2. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
3. All credit hours for the certificate must be earned at the University of Colorado Denver.

Certificate Restrictions, Allowances and Recommendations

1. Students have 7 years to complete this certificate.
2. Students should evaluate course descriptions to determine if the prerequisites or corequisites have been completed in order to move forward in the certificate.
3. No course may be taken more than twice.
4. Graduate level ECON credit counted towards the Graduate Certificate in Health Economics & Outcomes Research may be subsequently counted towards a CU Denver graduate degree in Economics. Certificate students are not guaranteed admission to the M.S. program in Health Economics. However, certificate students can apply to the M.S. program in economics at any time.
5. Students who complete the Graduate Certificate in Health Economics & Outcomes Research and later apply to the M.S. program in Health Economics at CU Denver may submit their certificate in place of GRE scores and letters of recommendation.
6. Students admitted to the M.A., M.S., or Ph.D. programs in economics at CU Denver may complete the graduate certificate concurrently with their degree program. However, courses that have already been counted towards any degree already awarded (undergraduate or graduate) may not be counted towards the certificate retroactively.

Required Courses

Code	Title	Hours
<i>Take the following</i>		12
ECON 4812	Advanced Econometric Methods	3
or ECON 5823	Econometrics II	
ECON 5030	Data Analysis with SAS	3
ECON 7661	Health Economics I	3
ECON 7662	Health Economics II	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/economics/programs/graduate-certificate-health-economics-outcomes-research/>).

English

Chair: Philip Joseph

Associate Chair: Michelle Comstock

Program Coordinator: Francine Olivas-Zarate

Program Assistant: Janelle (Jenny) Dunington

Office: 1015 9th Street Park

Telephone: 303-315-7830

Fax: 303-315-7826

Website: clas.ucdenver.edu/english/ (<http://clas.ucdenver.edu/english/>)

Overview

The English Studies graduate program provides a strong foundation in primary knowledge areas, including the history of the English language, the major genres and the theory of genre, approaches to literacy, and the impact of technology on reading and writing. The program invites MA candidates to build on this foundation by developing an expertise in teaching, and by expanding their content knowledge with courses in rhetoric, literature, film, and applied linguistics.

Additional Information

For additional information on majors, options, minors and certificates call the Department of English office at 303-315-7830.

The English department also offers a graduate certificate in teaching English to speakers of other languages.

English, MA

Requirements for Admission

The deadline for summer or fall admission is April 1; the deadline for spring is October 1. Complete applications must include the following:

- A completed University of Colorado graduate application
- One copy of all graduate and undergraduate transcripts, and for any nondegree courses previously taken
- Three letters of recommendation in which the recommender specifically addresses the candidate's ability to pursue successfully the program chosen
- Graduate Record Exam scores are optional. You may provide them if you wish, but they are no longer required.
- Evidence of a 3.0 GPA in previous courses
- A one-page statement of purpose
- 10-page critical writing sample

In addition to these requirements, applicants for the program must have successfully completed 24 semester hours in English courses (graduate or undergraduate), excluding courses in composition, creative writing or speech. At least 15 of these semester hours must be at the upper-division level.

Transfer of Credits from Other CU Campuses

Students admitted to graduate study in English may complete all of their course requirements for the MA degree at CU Denver. Up to 9 semester hours (total) may be transferred from the University of Colorado Boulder, University of Colorado Colorado Springs or other graduate programs; however, such transfer requires the written approval of the graduate advisor. Only 9 semester hours of courses taken at CU Denver before acceptance into the program can be counted toward the degree. Further, work already applied toward a graduate degree received at the University of Colorado or at another institution cannot be transferred toward another graduate degree of the same level at CU Denver. (For other rules concerning transfer of graduate credits, see the Graduate School Policies and Procedures (p. 59)) For more information, contact the graduate program director at 303-315-7847.

Programs

- English, MA (p. 279)
- Teaching College-level Language and Literacy Certificate (p. 281)
- Teaching College-Level Literature and Film Graduate Certificate (p. 282)
- Teaching English Language Learners Graduate Certificate (CTELL) (p. 283)

Faculty

Professors:

Joanne Addison, PhD, Purdue University

Colleen Donnelly, PhD, University of Washington

Jeffrey Franklin, PhD, University of Florida

Wayne Miller, MFA, University of Houston

Bradford K. Mudge, PhD, University of Texas, Austin

Cynthia Wong, PhD, University of Wisconsin, Milwaukee

Associate Professors:

Pompa Banerjee, PhD, University of Massachusetts

Brian Barker, PhD, University of Houston

Nicole Beer, PhD, University of Missouri-Columbia

Teague Bohlen, MFA, Arizona State University

Nancy Ciccone, PhD, University of California, Berkeley

Michelle Comstock, PhD, Purdue University

Sarah Hagelin, PhD, University of Virginia

Rodney Herring, PhD, University of Texas, Austin

Philip Joseph, PhD, State University of New York, Buffalo

Joanna Luloff, MFA, Emerson College; PhD, University of Missouri

Gillian Silverman, PhD, Duke University

John Tinnell, PhD, University of Florida, Gainesville

Ian Ying, PhD, University of Arizona

Assistant Professor:

Kari Campeau, PhD, University of Minnesota

Andrew Scahill, PhD, University of Texas, Austin

English (ENGL) Courses

ENGL 5000 - Studies of Major Authors (3 Credits)

An intensive study of works of one major British or American author. Examples: Dickens, Woolf or James. Prereq: Graduate standing. Cross-listed with ENGL 4000. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5001 - Special Topics (1-6 Credits)

This variable credit course offers intensive study of the teaching of writing in a collaborative action-oriented approach. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5080 - History of the English Language (3 Credits)

Examines how English has changed since A.D. 800 through examples of writing from different periods, with attention to the way various groups have enriched our vocabulary and altered our syntax. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5093 - Teaching of Writing (3 Credits)

Deals with the analysis of rhetorical theory with an emphasis on practical applications in the classroom, with attention to alternative pedagogies in teaching. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5100 - Introduction to Graduate Studies (3 Credits)

Introduces students to scholarly methods & key debates in English Studies. Familiarizes students with department's specializations in film, linguistics, literature & rhetoric. Offers new MA students training in the primary forms of scholarly writing within the discipline (journal article, conference abstract, synopsis, book review). Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5110 - Denver Writing Project (3-9 Credits)

An intensive extended workshop in the development of one's personal and professional writing and in the teaching of writing. Open to those who are members of the Denver Writing Project. Prereq: Graduate standing. Term offered: summer. Max hours: 9 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5120 - Denver Writing Project Advanced Institute (1 Credit)

Advanced institutes provide intensive examination of an issue related to the teaching of writing. The specific issues are of two kinds—repeatable ones such as "Alumni Institute" and "Writing Retreat" and variable, such as "Action Research" and "Writing Across the Curriculum." Prereq: Graduate standing. Term offered: summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5135 - English Language Study (3 Credits)

Introduces students to varieties of English in use today, while tracing range of "new Englishes" back to origins of language. Students will develop an understanding of English as a global language, why it spread throughout the world and how, paying specific attention to print history of English and relationship to other print languages. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5140 - Special Topics with NWP (3 Credits)

This online University of Colorado Denver English Department and Denver Writing Project course will focus on teaching argument writing to grades 3 - 12+ with the National Writing Project's College, Career, and Community Writers Program. Coursework will provide participants the opportunity to engage in the study of researched-based pedagogy for the teaching of evidence-based argument writing while nurturing themselves as writers. Term offered: irregular. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENGL 5145 - Theory (3 Credits)

Designed to enrich students' understanding of a variety of modes of theoretical discourse that have influenced modern critical practice in English studies. While the course explores the evolution of criticism, it gives primary emphasis to recent developments. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5150 - Research Methods (3 Credits)

Designed to prepare students for graduate scholarship in language, literacy, and the teaching of writing; should be taken soon after entering the program. Introduction to the research methods and stylistic standards for graduate-level writing. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5155 - Genres of Writing (3 Credits)

Explores work of major contributors to genre and narrative theory. Offers students exposure to emergent genres in new media, while situating these new genre in relation to historical precedents. Gives students an introduction to the evolution of central genres in literary studies, such as novel, poem, political speech and western film. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5160 - Poetics (3 Credits)

"Mechanics" of poetry in English, including meter, rhythm, rhyme, line, and other systems of measurement and logic. Emphasis is on historical development of poetic art in English. Note: this course assumes that students have completed ENGL 1400. Prereq: Graduate standing. Cross-listed with ENGL 4160. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5165 - Literacy and Technology (3 Credits)

Studies the material forms in which English language has circulated-e.g., the history of the oral and manuscript tradition; the history of the book; and the impact of digital technologies on print culture. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5166 - History of American Poetry (3 Credits)

Examines major American poets and poetic trends from the colonial period to the present, with attention to cultural contexts and to development of distinctively American practices. Cross-listed with ENGL 4166. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5171 - Language Theory (3 Credits)

Introduces linguistic theory to the beginning graduate student. Builds upon the material included in the undergraduate class, by adding materials pertaining to the teaching of writing and graduate language studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5175 - Writing in the Sciences (3 Credits)

Provides rhetorical analyses of scientific discourse and student practice in writing research reports and proposals. Restriction: Restricted to students at the graduate level (including non-degree and Anschutz Medical Campus programs). Cross-listed with ENGL 4175. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students at the graduate level (including non-degree and Anschutz Medical Campus programs).

ENGL 5177 - Technical Editing (3 Credits)

Provides instruction in the conventions of editing in the genre of technical communication. Students develop skills they can use to edit a variety of technical documents. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with ENGL 4177. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5190 - Advanced Topics in Writing & Digital Studies (3 Credits)

Focuses on particular issues in rhetoric and writing as they pertain to reading and writing, including language and gender, language and culture, and language of political action. Cross-listed with ENGL 4190. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5200 - Survey of the English Novel to 1900 (3 Credits)

Rise and development of the English novel from its beginnings in the 18th century through the end of the 19th century, including such writers as Defoe, Fielding, Austen, Shelley, the Brontes, Thackeray, and Dickens. Cross-listed with ENGL 4200. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5210 - History of the English Novel II (3 Credits)

Overview of the English novel from mid-19th century to World War II, emphasizing the important developments which the form underwent in the hands of notable novelists, including Charles Dickens, the Brontes, George Eliot, Henry James, Joseph Conrad, D.H. Lawrence and Virginia Woolf. Cross-listed with ENGL 4210. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5220 - African-American Literature (3 Credits)

Surveys African-American literature with special emphasis on post-Civil War writing. Cross-listed with ENGL 4220, ETST 4220 and ETST 5220. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5230 - The American Novel (3 Credits)

Surveys major developments in the American novel from the 18th century to the 21st century. Cross-listed with ENGL 4230. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5235 - Faulkner (3 Credits)

Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Cross-listed with ENGL 4235. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5236 - The American Short Story (3 Credits)

Traces the development of the short story in the United States, from its beginnings in colonial tales to its contemporary renaissance as a dominant literary form. Cross-listed with ENGL 4236. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5240 - Topics In Contemporary American Literature (3 Credits)

Seminar focusing on a segment of contemporary American literature. Cross-listed with ENGL 4240. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA).

ENGL 5250 - Twentieth Century Fiction (3 Credits)

Deals with novels originating in a variety of countries in an effort to see the similarities and differences that varying nationalities bring to the genre. Cross-listed with ENGL 4250. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5280 - Proposal and Grant Writing (3 Credits)

Focuses on research, design, composition, and editing original proposals. Includes idea development, identification of funding sources, and the creation of persuasive documents. Prereq: Graduate standing. Cross-listed with ENGL 4280. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5300 - History of British Drama (3 Credits)

Intended as a survey of British drama from the miracle plays of the medieval period, through the Renaissance and Restoration, to the "kitchen sink" realists of the 1960s. Cross-listed with ENGL 4300. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5306 - Survey of Feminist Thought (3 Credits)

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, HIST 4306, 5306, WGST 4306, 5306. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5308 - Contemporary Feminist Thought (3 Credits)

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Prereq: Graduate standing. Cross-listed with ENGL 4308, PHIL 4308, PHIL 5308, WGST 4308, WGST 5308. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5320 - History of Poetry in English (3 Credits)

Studies the major schools and eras of English prosody, including the poetry of Great Britain and the United States, from the medieval period to the present. Cross-listed with ENGL 4320. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5350 - History of American Drama (3 Credits)

Studies American drama from its foundations in the 18th century through movements including realism, expressionism, symbolism, agit-prop, black nationalism, feminism, and performance art. Drama read as both text and performance, as sometimes supporting the status quo and as sometimes subverting it. Cross-listed with ENGL 4350. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5400 - Old English I (3 Credits)

Instruction in the Old English language. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5410 - Old English II: Beowulf (3 Credits)

Continuing training in the reading of Old English and intensive reading of Beowulf. Note: this course assumes that students have completed ENGL 4400 or 5400. Prereq: Graduate standing. Cross-listed with ENGL 4410. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5420 - Film Theory and Criticism (3 Credits)

(1) Familiarizes students with some of the central concepts and debates in film theory and criticism, both classic and contemporary, (2) enables students to develop advanced analytic and interpretive skills, and (3) guides students toward discovering and articulating original critical and theoretical perspectives. Note: this course assumes that students have completed ENGL 2250, 3070, and 3080 or equivalent. Prereq: Graduate standing. Cross-listed with ENGL 4420. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5460 - Contemporary World Literature (3 Credits)

Surveys literature written by world writers since World War II. Note: Texts read in English. Cross-listed with ENGL 4460. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5500 - Medieval Literature (3 Credits)

Introduces representative writers from the Norman Conquest to about 1550. Emphasis on a variety of genres, including religious poetry, Arthurian romance, dream vision and drama. Cross-listed with ENGL 4500. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5510 - Whores and Saints: Medieval Women (3 Credits)

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Note: this course assumes that students have completed at least 9 hours of literature coursework. Prereq: Graduate standing. Cross-listed with ENGL 4510, RLST 4730/5730, WGST 4510/5510. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5520 - English Renaissance (3 Credits)

Introduces some of the important writers in this major period of English literature (1500-1660). Special attention to the works of Sidney, Milton, Spenser, Shakespeare, Donne, Herbert and Johnson. Cross-listed with ENGL 4520. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5530 - Milton (3 Credits)

Extensive reading in John Milton's poetry (Lycidas, Paradise Lost, Paradise Regained, Samson Agonistes) as well as his political, social and theological writings. Cross-listed with ENGL 4530. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5540 - Restoration and the 18th Century (3 Credits)

Introduces some of the important writers of the "Age of Reason." Emphasis on such figures as Bunyan, Burke, Dryden, Johnson, Pope and Swift. Cross-listed with ENGL 4540. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5560 - English Romanticism (3 Credits)

Studies major works of the chief English writers of the first part of the 19th century, with emphasis on such representative figures as Wollstonecraft, Godwin, Blake, Wordsworth, Coleridge, Hazlitt, Byron, Keats and Shelley. Cross-listed with ENGL 4560. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5580 - The Victorian Age (3 Credits)

Examines the main currents of Victorian thought in prose and poetry from about 1830 to the end of the century, including such writers as Browning, Carlyle, Mill, Newman, Ruskin, Swinburne and Tennyson. Cross-listed with ENGL 4580. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5600 - Modernism (3 Credits)

Modernist literature from the beginning of the 20th century through World War II, including such writers as Eliot, Joyce, Forester, Ford, Yeats, Woolf and Barnes. Examines the social-political influences as well as the aesthetic and stylistic elements which define modernist writing. Cross-listed with ENGL 4600. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5601 - Principles and Practices of Second Language Acquisition (3 Credits)

Overview of basic principles and practices in the learning and teaching of English as a second language. Cross-listed with ENGL 4601. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5610 - Narrative: Form and Theory (3 Credits)

A critical and theoretical exploration of the elements of narrative -e.g., plot, character, dialogue, discourse-in literature and film. This course is especially useful for fiction-writing students in the Creative Writing Track. Prereq: Graduate standing. Cross-list ENGL 4610. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5650 - American Literature to the Civil War (3 Credits)

Graduate survey of American literature from the Colonial period to the Civil War, with particular attention to the question of what makes this literature distinctly American. Explores a wide range of genres of American literature in an effort to assess how this tradition of letters shaped our historical past and continues to influence contemporary American culture and ideology. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5651 - Second Language Writing (3 Credits)

Topics include the similarities between first and second language writing, the processes of composition and revision, teacher response to student writing, student processing of feedback, writing assessment, and the reading or writing connection. Cross-listed with ENGL 4651. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5655 - American Literature: Civil War to the Cold War (3 Credits)

Graduate survey of American literature from the Civil War to the Cold War considered central to the tradition of American literature. Students will consider how new ideas about gender, race, class, nationality, postcoloniality, history, and aesthetics have influenced the field of American literary studies. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5730 - Chaucer (3 Credits)

Extensive reading in Chaucer's works in Middle English, including his lyrics, dream visions, Troilus and Criseyde, and the Canterbury Tales. Examines sources, historical and ideological factors influencing the texts. Prereq: Graduate standing. Cross-listed with ENGL 4730. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5735 - Philosophy and Literature (3 Credits)

Considers the philosophical dimensions of literature. Cross-listed with ENGL 4735, PHIL 5730, 4730. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5745 - Humanistic Writing About Medicine and Biology (3 Credits)

Investigates medical and biological writing over the last two centuries with an emphasis on reception, ethical issues, and the differences between professional and popular writing. Prereq: Graduate standing. Cross-listed with ENGL 4745. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5755 - Illness & Disability Narrative (3 Credits)

Narratives of mental, chronic or terminal illness, and disability have become common over the past decades. There are a number of ways in which these stories are told by those reflecting on their experiences: individuals choosing to tell such stories must consider how their stories will be received and what they are revealing about themselves in dealing with their conditions. Many issues arise when looking at the production and reception of these narratives, including acceptance and assimilation, stigmatization, access and quality of treatment, discrimination, accommodation, pity and stereotyping responses. These narratives are consumed, usurped, and reacted to by clinicians, communities and society at large with their own agendas, expectations, fears and judgments of the stories and of the individuals telling their stories. This course is about the issues and concerns of producing an illness or disability narrative and the consumption/reception of those narratives by health professionals, communities, and society at large. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross listed with ENGL 4755. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5770 - Topics in English: Film and Literature (3 Credits)

May look at specific genres, aesthetic approaches to literature, ideological or socio-political agendas, or other special topics in literature and/or film. Prereq: Graduate standing. Cross-listed with ENGL 4770.

Term offered: spring, fall. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5840 - Independent Study: ENGL (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5913 - Practicum in Language and Rhetoric (1-3 Credits)

Supervised work in applied language or rhetoric and the teaching of writing. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5939 - Internship (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6010 - Studies of Major Authors (3 Credits)

Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6110 - Special Topics in Literature (3 Credits)

An intensive study of specialized topics in English and/or American literature. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 30.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6120 - Special Topics in Film (3 Credits)

An intensive study of specialized topics in film. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 30.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6840 - Independent Study (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6920 - Directed Readings (3 Credits)

Offers graduate student's instruction on an individual basis. Serves as preparation for the MA (literature) comprehensive examination. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENGL 6960 - Master's Project (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENGL 6970 - Portfolio Exam (3 Credits)

In the portfolio exam, students prepare the culminating document of students' MA work, a portfolio combining reflection on work done at CU Denver with a forward look at students' career goals. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

English, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Please click [here](#) (p. 274) to see English department information.

Introduction

Program Director: Gillian Silverman

E-mail: gillian.silverman@ucdenver.edu

Overview

The English Studies graduate program provides a strong foundation in primary knowledge areas, including history of the English language, the major genres and the theory of genre, approaches to literacy, and the impact of technology on reading and writing. The program invites MA candidates to build on this foundation by developing an expertise in teaching, and by expanding their content knowledge with courses in rhetoric, literature, film, and applied linguistics..

Contact the graduate program director for more information on this program.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences

reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete a minimum of 30 ENGL credit hours.
2. Students must complete all courses at the graduate (5000 and above) level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete a minimum of 21 ENGL credits with CU Denver faculty,

Program Restrictions, Allowances and Recommendations

1. All courses are 3 credit hours unless otherwise noted.
2. All courses must be completed in the ENGL subject code
3. Students must complete all required coursework satisfactorily.
4. Students must demonstrate fourth-semester proficiency in a second language. Old English or Latin will also satisfy this requirement.
5. Compliance with all graduate school policies and requirements (p. 59) is required.
6. Graduate students may only count 6 credit hours of Independent Study toward the English MA degree.
7. **Candidate for Degree:** Graduate students must be registered for at least one credit hour during the semester that they graduate. Those who have completed all required courses and requirements may register for CAND 5940 Candidate for Degree section 900.
8. **Teaching Assistantships:** Graduate students who receive a teaching assistantship must take ENGL 5913 Practicum in Language and Rhetoric in the fall during their first semester as a teaching assistant. ENGL 5913 Practicum in Language and Rhetoric may also be counted as an elective.

Required Courses

Code	Title	Hours
<i>Take the following</i>		<i>15</i>
ENGL 5100	Introduction to Graduate Studies	3
ENGL 5135	English Language Study	3
ENGL 5145	Theory (Literary and Rhetorical Theory)	3
ENGL 5155	Genres of Writing	3
ENGL 5165	Literacy and Technology	3

Electives

Code	Title	Hours
<i>Take 12 graduate level credit hours.</i>		<i>12</i>
<i>Students may choose to concentrate English graduate courses in a particular area of study that meets the student's goals in the program.</i>		
ENGL 5000	Studies of Major Authors	3
ENGL 5001	Special Topics	1-6
ENGL 5080	History of the English Language	3

ENGL 5093	Teaching of Writing	3
ENGL 5110	Denver Writing Project	3-9
ENGL 5120	Denver Writing Project Advanced Institute	1
ENGL 5150	Research Methods	3
ENGL 5160	Poetics	3
ENGL 5166	History of American Poetry	3
ENGL 5171	Language Theory	3
ENGL 5175	Writing in the Sciences	3
ENGL 5177	Technical Editing	3
ENGL 5190	Advanced Topics in Writing & Digital Studies	3
ENGL 5200	Survey of the English Novel to 1900	3
ENGL 5210	History of the English Novel II	3
ENGL 5220	African-American Literature	3
ENGL 5230	The American Novel	3
ENGL 5235	Faulkner	3
ENGL 5236	The American Short Story	3
ENGL 5240	Topics In Contemporary American Literature	3
ENGL 5250	Twentieth Century Fiction	3
ENGL 5280	Proposal and Grant Writing	3
ENGL 5300	History of British Drama	3
ENGL 5306	Survey of Feminist Thought	3
ENGL 5308	Contemporary Feminist Thought	3
ENGL 5320	History of Poetry in English	3
ENGL 5350	History of American Drama	3
ENGL 5400	Old English I	3
ENGL 5410	Old English II: Beowulf	3
ENGL 5420	Film Theory and Criticism	3
ENGL 5460	Contemporary World Literature	3
ENGL 5500	Medieval Literature	3
ENGL 5510	Whores and Saints: Medieval Women	3
ENGL 5520	English Renaissance	3
ENGL 5530	Milton	3
ENGL 5540	Restoration and the 18th Century	3
ENGL 5560	English Romanticism	3
ENGL 5580	The Victorian Age	3
ENGL 5600	Modernism	3
ENGL 5601	Principles and Practices of Second Language Acquisition	3
ENGL 5610	Narrative: Form and Theory	3
ENGL 5650	American Literature to the Civil War	3
ENGL 5651	Second Language Writing	3
ENGL 5655	American Literature: Civil War to the Cold War	3
ENGL 5730	Chaucer	3
ENGL 5735	Philosophy and Literature	3
ENGL 5745	Humanistic Writing About Medicine and Biology	3
ENGL 5755	Illness & Disability Narrative	3
ENGL 5770	Topics in English: Film and Literature	3
ENGL 5840	Independent Study: ENGL	1-3
ENGL 5880	Directed Research	1-6

Thesis or Portfolio Exam

Code	Title	Hours
<i>Take the following</i>		3-6
ENGL 6950	Master's Thesis (Students must consult with and submit a proposal to the graduate committee for approval.)	4-6
ENGL 6970	Portfolio Exam	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/english/graduate-program/>).

Teaching College-level Language and Literacy Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) to see English department information.

Associate Professor: Rodney Herring
Office: 1061 9th St. Park, Room 102
Phone: 303-315-7848
E-mail: Rodney.Herring@ucdenver.edu

Overview

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Language and Literacy. It fulfills the increasing needs of educators seeking to deepen and to broaden their specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus. The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

This certificate can be completed fully online, fully on campus, or a combination of the two.

Additional Information

Additional Information about the Graduate Certificate in Teaching College-level Language and Literacy may be obtained from:

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

- Students must complete a minimum of 18 ENGL credit hours
- Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
- Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective

courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.

- All credits for the certificate must be completed with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

- All courses must be completed with ENGL subject code.
- All candidates must possess a Bachelor's of Arts in any field.

Required Courses

Code	Title	Hours
<i>Take all of the following courses:</i>		12
ENGL 5093	Teaching of Writing	
ENGL 5155	Genres of Writing	
	or ENGL 5135 English Language Study	
ENGL 5165	Literacy and Technology	
ENGL 5601	Principles and Practices of Second Language Acquisition	
	or ENGL 5655 Second Language Writing	

Electives

Code	Title	Hours
<i>Take 2 graduate level ENGL courses not taken above (may include 6 hours of Denver Writing Project Summer Institute)</i>		6
ENGL 5000	Studies of Major Authors	3
ENGL 5001	Special Topics	3-6
ENGL 5080	History of the English Language	3
ENGL 5100	Introduction to Graduate Studies	3
ENGL 5110	Denver Writing Project	3-9
ENGL 5135	English Language Study	3
ENGL 5140	Special Topics with NWP	3
ENGL 5145	Theory	3
ENGL 5150	Research Methods	3
ENGL 5155	Genres of Writing	3
ENGL 5160	Poetics	3
ENGL 5166	History of American Poetry	3
ENGL 5171	Language Theory	3
ENGL 5175	Writing in the Sciences	3
ENGL 5177	Technical Editing	3
ENGL 5190	Advanced Topics in Writing & Digital Studies	3
ENGL 5200	Survey of the English Novel to 1900	3
ENGL 5210	History of the English Novel II	3
ENGL 5220	African-American Literature	3
ENGL 5230	The American Novel	3
ENGL 5235	Faulkner	3
ENGL 5236	The American Short Story	3
ENGL 5240	Topics In Contemporary American Literature	3
ENGL 5250	Twentieth Century Fiction	3
ENGL 5280	Proposal and Grant Writing	3
ENGL 5300	History of British Drama	3
ENGL 5306	Survey of Feminist Thought	3

ENGL 5308	Contemporary Feminist Thought	3
ENGL 5320	History of Poetry in English	3
ENGL 5350	History of American Drama	3
ENGL 5400	Old English I	3
ENGL 5410	Old English II: Beowulf	3
ENGL 5420	Film Theory and Criticism	3
ENGL 5460	Contemporary World Literature	3
ENGL 5500	Medieval Literature	3
ENGL 5510	Whores and Saints: Medieval Women	3
ENGL 5520	English Renaissance	3
ENGL 5530	Milton	3
ENGL 5540	Restoration and the 18th Century	3
ENGL 5560	English Romanticism	3
ENGL 5580	The Victorian Age	3
ENGL 5600	Modernism	3
ENGL 5601	Principles and Practices of Second Language Acquisition	3
ENGL 5610	Narrative: Form and Theory	3
ENGL 5650	American Literature to the Civil War	3
ENGL 5651	Second Language Writing	3
ENGL 5655	American Literature: Civil War to the Cold War	3
ENGL 5730	Chaucer	3
ENGL 5735	Philosophy and Literature	3
ENGL 5745	Humanistic Writing About Medicine and Biology	3
ENGL 5755	Illness & Disability Narrative	3
ENGL 5770	Topics in English: Film and Literature	3
ENGL 5840	Independent Study: ENGL	3
ENGL 5880	Directed Research	3-6
ENGL 5913	Practicum in Language and Rhetoric	3
ENGL 5939	Internship	3
ENGL 6010	Studies of Major Authors	3
ENGL 6110	Special Topics in Literature	3
ENGL 6120	Special Topics in Film	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/english/graduate-certificate-teaching-college-level-language-and-literacy/>).

Teaching College-Level Literature and Film Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program

Please click [here](#) to see English department information.

Program Director: Gillian Silverman
Email: gillian.silverman@ucdenver.edu

Overview

The English Department at the University of Colorado Denver offers a Graduate Certificate in Teaching College-level Literature and Film. It fulfills the increasing needs of educators seeking to deepen and to broaden their content specialization. It allows an English Master's Candidate to specialize in an area of study in addition to the primary area of degree focus.

The certificate does not grant state licensure. It ensures competency for those who already are licensed, provides documentation in expertise for those teaching in community colleges, and enables specialization for those with master's degrees in related fields (i.e. Rhetoric, Composition, Literature, Film Studies, Humanities, Education).

Additional Requirements

Additional Information about the Graduate Certificate in Teaching College-level Literature and Film may be obtained from:

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete a minimum of 18 ENGL credit hours
2. Students must complete all 18 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. All courses must be completed with ENGL subject code.
2. All candidates must possess a Bachelor's of Arts in any field.

Required Courses

Code	Title	Hours
<i>Take all of the following</i>		9
ENGL 5100	Introduction to Graduate Studies	3
ENGL 5145	Theory (Literary and Rhetorical Theory)	3
ENGL 5155	Genres of Writing	3

Electives

Code	Title	Hours
<i>Take 3 graduate level Literature or Film courses</i>		9
ENGL 5000	Studies of Major Authors	3
ENGL 5160	Poetics	3
ENGL 5166	History of American Poetry	3
ENGL 5200	Survey of the English Novel to 1900	3
ENGL 5210	History of the English Novel II	3
ENGL 5220	African-American Literature	3
ENGL 5230	The American Novel	3
ENGL 5235	Faulkner	3
ENGL 5236	The American Short Story	3
ENGL 5240	Topics In Contemporary American Literature	3
ENGL 5250	Twentieth Century Fiction	3

ENGL 5300	History of British Drama	3
ENGL 5306	Survey of Feminist Thought	3
ENGL 5308	Contemporary Feminist Thought	3
ENGL 5320	History of Poetry in English	3
ENGL 5350	History of American Drama	3
ENGL 5400	Old English I	3
ENGL 5410	Old English II: Beowulf	3
ENGL 5420	Film Theory and Criticism	3
ENGL 5460	Contemporary World Literature	3
ENGL 5500	Medieval Literature	3
ENGL 5510	Whores and Saints: Medieval Women	3
ENGL 5520	English Renaissance	3
ENGL 5530	Milton	3
ENGL 5540	Restoration and the 18th Century	3
ENGL 5560	English Romanticism	3
ENGL 5580	The Victorian Age	3
ENGL 5600	Modernism	3
ENGL 5650	American Literature to the Civil War	3
ENGL 5655	American Literature: Civil War to the Cold War	3
ENGL 5730	Chaucer	3
ENGL 5735	Philosophy and Literature	3
ENGL 6010	Studies of Major Authors	3
ENGL 6110	Special Topics in Literature	3
ENGL 6120	Special Topics in Film	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/english/graduate-certificate-teaching-college-level-literature-and-film/>).

Teaching English Language Learners Graduate Certificate (CTELL)

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here to see English department information.

Program Advisor: Joanne Addison, Professor

Office: 1059 Ninth Street Park, Room 104

Telephone: 303-315-7000

E-mail: Joanne.Addison@ucdenver.edu

Program Description

To meet the increasing needs of individuals seeking advanced training in teaching English as a second language, the English department at CU Denver offers a graduate Certificate in Teaching English Language Learners (CTELL).

The certificate program, which can be completed through CU Online, is designed to build the necessary skills to teach adults English as a second language through focused preparation. It is primarily aimed at native speakers of English who want to teach overseas, but may serve the needs of international students wanting to teach English in their home country or other countries.

Upon successful completion of the program, CTELL participants will be able to:

- Discuss the theoretical basis of second language instruction
- Demonstrate a variety of effective ESL teaching techniques
- Explain, in pedagogically relevant ways, the linguistic structures of the English language

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Additional Information

Length of Time

The course of study will typically last one academic year, including the summer session.

When You May Begin

You may begin in any semester. There is no fixed deadline for application for admission.

Prerequisites

All applicants must have a bachelor's degree or the equivalent, with a 3.0 GPA, to be accepted to the program. Graduate students at CU Denver will also be permitted to apply for the certificate while they are concurrently completing another graduate degree. Permission may not be granted to graduate students in the applied linguistics option of the Master of Arts in English program.

Non-native speakers of English are required to submit an official TOEFL (Test of English as a Foreign Language) report showing a score of at least 600. Those who score below 600 but above 500 on the TOEFL may be admitted conditionally to the program. Under these conditions, students will have their English language skills assessed by the faculty of the program immediately after they arrive on campus to determine whether further courses are needed to develop English language proficiency. After assessment, the students may be assigned to full-time language study in an intensive English program, permitted to take graduate-level classes on a conditional basis along with further designated language study or permitted to begin graduate study without further restrictions.

Program Requirements

1. Students must complete a minimum of 12 ENGL credit hours
2. Students must complete all 12 ENGL credits at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credits for the certificate must be completed with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. All courses must be completed with ENGL subject code.
2. All candidates must possess a Bachelor's of Arts in any field.

Required Courses

Code	Title	Hours
<i>Take all of the following:</i>		9
ENGL 5171	Language Theory	3
ENGL 5601	Principles and Practices of Second Language Acquisition	3
ENGL 5651	Second Language Writing	3

Electives

Code	Title	Hours
<i>Take 3 elective credits</i>		3
ENGL 5093	Teaching of Writing	3
ENGL 5190	Advanced Topics in Writing & Digital Studies	3
ENGL 5939	Internship (approved by the program advisor)	1-3

An alternative elective approved by the program advisor

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/english/ctell-graduate-certificate-teaching-english-language-learners/>).

Ethnic Studies

Chair: Faye Caronan

Program Assistant: Sothary Chea M.S

Office: Plaza Building, Ste. 102

Telephone: 303-315-7205

Fax: 303-315-7206

Overview

Ethnic Studies programs are designed to help students majoring in the liberal arts and sciences develop a sophisticated and broad understanding of ethnicity and its role in contemporary American society. They provide students with the theories and concepts needed to comprehend and interpret relations between and among ethnic groups in the United States. Students are better prepared to live and work in a diverse society when educational institutions foster a positive learning environment in which differences contained within various U.S. communities can be studied not as a social problem, as is often the case, but for their history of struggles and contributions.

The interdisciplinary nature of the ethnic studies program curriculum provides students the opportunity, through academic investigation, to develop a greater understanding of the cultural diversity of the present-day United States and to acquire skills needed in professional and social service fields. This multidisciplinary, comparative approach to contemporary and historical research methodologies provides the basis for students to analyze the diverse social, economic, political and cultural facets of ethnic groups in the United States. Special emphasis is given to new perspectives that recover the history, creative expression of underrepresented groups.

Programs and courses reflect prevailing thought in ethnic studies, draw parallels between various groups in the United States and link the studies of their country of origin with current and historical research on race and ethnic relations in the United States. They reflect critical analysis of the dominant perspectives through which ethnic groups have been described and perceived. Also investigated are the intersections of ethnicity with structures of political, educational, gender, business and economic, social and cultural power, all of which are emphasized through the study

of materials and works by and about previously excluded groups. The cultural processes through which ethnic groups have sustained or altered their cultural identities are emphasized, as well as the pressures faced by members of various ethnic groups to maintain traditional values and conform to mainstream U.S. society.

Ethnic Studies Graduate Certificate

Admission Requirements

- Degree: BA/BS
- A minimum GPA of 3.00 is recommended

Application Process

Applicants for a Graduate Certificate Program will send the following documents to the Certificate Program Director:

- Graduate Certificate Application Form:
- Official Transcripts
- Resume
- Letter of interest

Upon approval of the student's admission by the Graduate Certificate Program, the program director will send the student's certificate admission file to the Graduate School. The Graduate School will confirm the applicant's credentials, will determine whether the student meets the general academic requirements of the Graduate School, will admit the student and inform the student of his/her admission to the Graduate Certificate Program.

Programs

- Ethnic Studies Graduate Certificate (p. 286)

Faculty

Associate Professors:

Faye Caronan, PhD, University of California, San Diego

Rachel E. Harding, PhD, University of Colorado, Boulder

Clinical Teaching Track Assistant Professor

Katherine Mohrman, PhD, University of Minnesota Twin Cities

Senior Instructors:

Dennis Green, ABD, University of New Mexico

Professor Emeritus:

Donna Martinez, PhD, University of Washington

Ethnic Studies (ETST) Courses

ETST 5000 - Research Methods in Ethnic Studies (3 Credits)

Emphasizes the acquisition of a variety of data or information collection and analytic skills, especially those applicable to historical and social inquiry in ethnic studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4000. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5020 - Race, Culture and Immigration (3 Credits)

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Graduate standing or instructor permission. Cross-listed with SOCY 4020, ETST 4020 and SOCY 5020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5021 - Black and Latino Children in Families and Schools (3 Credits)

With a focus on application of scholarship to practice, this interdisciplinary course will introduce graduate students to scholarly literature from family sciences, sociology, education and related fields to understand Black and Latino children within family, school and community systems. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HDFS 5020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5030 - Race, Religion and Belonging in the United States (3 Credits)

Race/ethnicity and religion are constitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging in the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources such as sermons, reality TV shows, court cases and graphic images as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation-state, thereby constructing the boundaries of the state itself. Restriction: Graduate standing or instructor permission required to register. Cross-listed with ETST 4030, RLST 4030, RLST 5030, HIST 4209 and HIST 5029. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5165 - Cultural Diversity Awareness in the Workplace (3 Credits)

This course will analyze the impact and effectiveness of cultural diversity awareness in a variety of workplace settings including educational institutions, businesses, health care organizations, and non-profit organizations. Students will learn how implicit biases and structural inequality impact workplace culture, a work place's productivity, and a work place's ability to fulfill their mission. By the end of the course, students will acquire the skills to advocate for and implement inclusive work place policies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ETST 4165. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5220 - African-American Literature (3 Credits)

Surveys African-American literature with special emphasis on post-Civil War writing. Cross-listed with ETST 4220, ENGL 4220, and ENGL 5220. Max hours: 3 Credits.

Grading Basis: Letter Grade

ETST 5305 - Women of Color Feminisms (3 Credits)

This course is an overview of women of color feminist theorizing (thinking) and praxis (practice) in the U.S. We will explore these feminisms through the writing, art, and organizing efforts of women and trans, femme, and non-binary people of color with a focus on key themes and concepts including identity, difference, oppression, intersectionality, representation, violence, resistance, empowerment, solidarity, and coalition. Texts for the course highlight key issues in the feminist theorizing and praxis of Black, Latina/x, Chicana/x, Asian (American), Pacific Islander, Indigenous, and Arab (American) women and trans, femme, and non-binary people of color, especially the politics of identity and representation; structural oppressions and violences; and practices of survival, resistance, and activism. Not only will we examine how these feminists have critiqued oppression(s) based on race, class, gender, sexuality, nationality, and religion, (as well as how these systems of domination intersect), but what kinds of approaches, strategies, and changes these thinkers and activists have organized for and promoted. Cross-listed with ETST 4305, WGST 4305 and WGST 5305. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5457 - American Political Thought (3 Credits)

Critical examination of American political life at the intersections of social categories such as race, class, gender, sexuality, disability, and Indigeneity. Exploration of key and marginal thinkers through a variety of texts and genres. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ETST 4457, PSCI 4457, and PSCI 5457. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ETST 5939 - Graduate Internship in Ethnic Studies (1-6 Credits)

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: Students must have graduate standing and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5960 - Capstone in Ethnic Studies (3 Credits)

Provides a broad overview of social research methods pertinent to the study of race, ethnicity, gender, and culture. Explores theories concerning "ethnicity and race" as both social construct and constituent feature of people's identities and lived experiences. Ethnic Studies is an interdisciplinary major where students make connections across diverse fields of inquiry; this course provides a structure for integrating an interdisciplinary examination of the intellectual, cultural, and social dimensions of racial and ethnic groups. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4960. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 6950 - Independent Study: Ethnic Studies (1-18 Credits)

Independent study in ethnic studies.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Additional Information: Colorado State University.

Ethnic Studies Graduate Certificate

Introduction

Please click here (p. 284) to see Ethnic Studies department information

Ethnic Studies is the interdisciplinary study of race and ethnicity in local, national, and global contexts. Recent events have shown a spotlight on systemic racial and ethnic inequities in the United States. As a result, businesses are adopting diversity, equity, and inclusion initiatives, environmental researchers are examining how climate change disproportionately impacts Black, Indigenous, and people of color, educators are concerned with how to address racial inequities in schools, doctors and other health care workers wonder how to best reach and treat BIPOC communities, and so on. An interdisciplinary graduate certificate in Ethnic Studies trains both academic researchers and professionals who can apply Ethnic Studies concepts in their fields is invaluable to any number of students who want to apply a racial and social justice lens to their intended future profession. The Ethnic Studies graduate certificate offers two paths for students: an academic path and an applied path. The academic track prepares students to pursue a PhD in Ethnic Studies or to apply an ethnic studies analysis in a traditional academic discipline. This track is for students interested in a career in the academy. The applied track prepares students to identify and address racial and ethnic inequities in their chosen professional field and is designed for students interested in a wide variety of careers, including primary and secondary education teaching, higher education administration, community organizing, community and government service, journalism and the media, environmental science, global economics, health care, legal services, library science, music, and publishing.

Upon earning the certificate, students will be able to:

- Understand how Ethnic Studies historically challenged traditional disciplinary knowledge production.
- Identify and analyze racial and ethnic inequities in popular culture, society, communities, and organizations.
- Integrate diverse methodologies to design interdisciplinary research projects focusing on race and ethnicity.
- Develop resources for building/strengthening healthy, multiracial institutions and communities.

These degree requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Additional information about the Ethnic Studies Graduate certificate may be obtained from the Ethnic Studies Office Plaza Building, Suite 102.

Phone: 303.315.7206 <https://clas.ucdenver.edu/ethnicstudies/certificates>

Faculty Advisor: Professor Faye Caronan Faye.Caronan@ucdenver.edu
(Faye.Caronan@ucdenver.edu)

Program Delivery

- This is an on campus program with some courses available online.

General Requirements

Click here (p. 59) for information about Academic Policies.

Certificate Requirements

1. Students must complete a minimum of 12 credit hours.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B (3.0) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Certificate Restrictions, Allowances and Recommendations

1. No course may be taken more than twice.
2. Courses cannot double count for the MH/MSS track in Ethnic Studies and the Ethnic Studies graduate certificate.
3. Students may be enrolled as a CU Denver graduate student in any discipline, or as a CU Denver non-degree seeking graduate student with a bachelor's degree.
4. International students must submit TOEFL scores or otherwise satisfy the University's English Language Proficiency requirement.

Required Courses

Code	Title	Hours
<i>Take all of the following courses:</i>		6
ETST 5000	Research Methods in Ethnic Studies	3
or ETST 5165	Cultural Diversity Awareness in the Workplace	
ETST 5960	Capstone in Ethnic Studies	3

Electives

Code	Title	Hours
<i>Take two of the following</i>		6
Any 5000 or 6000 level ETST course		3

ANTH 5230	Anthropology and Community Based Participatory Research	3
ANTH 5350	Anthropology of Globalization	3
COMM 5270	Intercultural Communication	3
COMM 5282	Environmental Communication	3
ENGL 5460	Contemporary World Literature	3
ETST 5000	Research Methods in Ethnic Studies	3
ETST/SOCY 5020	Race, Culture and Immigration	3
ETST 5021	Black and Latino Children in Families and Schools	3
ETST/RLST 5030	Race, Religion and Belonging in the United States	3
ETST 5165	Cultural Diversity Awareness in the Workplace	3
ETST/ENGL 5220	African-American Literature	3
ETST/WGST 5305	Women of Color Feminisms	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5343	Women & Gender in US History	3
or WGST 5343	Women & Gender in US History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3
HIST 5622	Oceans In History	3
PHIL 5308	Contemporary Feminist Thought	3
or ENGL 5308	Contemporary Feminist Thought	3
or WGST 5308	Contemporary Feminist Thought	3
PHIL 5500	Feminist Philosophy	3
or WGST 5500	Feminist Philosophy	3
PSCI 5457	American Political Thought ¹	3
SOCY 5050	Health Disparities	3
SOCY 5220	Population Change and Analysis	3

¹ The faculty are currently developing a cross-list between **PSCI 5457** and **ETST 5457, American Political Thought**, and intend to offer it starting Fall 2021. ETST 5457 will count as an elective course for the Ethnic Studies Graduate Certificate.

To learn more about the Student Learning Outcomes for this program, please visit our website (https://clas.ucdenver.edu/ethnic-studies/certificates/#ethnic_studies_graduate_certificate-172).

Geography and Environmental Sciences

Chair: Peter Anthamatten, PhD

Program Assistant: Sue Eddleman

Administrative Assistant: Meron Ayele

Office: North Classroom, 3016

Telephone: 303-315-7525

Fax: 303-315-7526

Website: clas.ucdenver.edu/ges/ (<http://clas.ucdenver.edu/ges/>)

Overview

The world is undergoing significant environmental and social changes. These issues range from climate change and food insecurity to rapid urbanization and social justice. Geographers identify factors affecting the distribution of people and their activities on the surface of the earth and provide meaningful solutions to problems faced

by society. This 'interdisciplinary' discipline is an ideal major for the liberal arts student, providing exposure to concepts and techniques for investigating environmental and sustainability issues, socioeconomic problems and planning policies. In the United States and around the world, balancing the preservation of the natural environment with concerns for social well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions.

Environmental Sciences is a multidisciplinary study of the environment, housed in the Department of Geography and Environmental Sciences. Academic fields involved in environmental sciences include chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics and the health sciences. Students planning to pursue the MS in environmental sciences must either have earned a bachelor's degree or have taken significant coursework in the natural/physical sciences or engineering and completed several other prerequisites (see the following graduate information). Graduate-level certificates in environmental sciences are also offered. The certificates may be earned stand-alone or as options in the MS in environmental sciences.

Environmental careers encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. Students interested in environmental issues and careers should investigate the whole field before deciding which course to follow. At CU Denver, the MS in environmental sciences emphasizes the natural/physical sciences and engineering with the addition of the social sciences and humanities.

Environmental Sciences, MS Requirements for Admission

The program is for students who either have baccalaureate degrees or have a significant background in one of the natural/physical sciences or engineering. In addition, minimum undergraduate science and math requirements are:

- one semester of upper-division statistics
- either two semesters of general chemistry with lab or two semesters of general biology with lab or one semester of each
- one semester of physics

If an applicant is missing one prerequisite, he/she can be admitted but must take an approved course as an elective before the start of their second year in the MS in Environmental Sciences degree. If two prerequisite courses are lacking, students may similarly be admitted, but must take both courses in the first year in the program. Applicants who have fulfilled all prerequisites have a better chance of acceptance. Applicants may be required to take additional prerequisite courses (necessary for completing particular core or elective courses). The prerequisite courses will not count toward the MS in environmental sciences degree. As part of the admission review process, applicants are required to submit a graduate application, a minimum of three letters of recommendation and transcripts from all institutions previously attended. CU Denver has a minimum requirement of a 3.0 undergraduate GPA for applicants to the Graduate School. Admissions for students with a GPA below 3.0 may be possible under special circumstances. The program admits new students for the fall semester only, and the number of students admitted to the program depends, in part, on space

availability. Applicants must submit all materials by the February 1st deadline.

Applied Geography & Geospatial Science, MA

Requirements for Admission

Applicants must hold a Bachelor's degree from an accredited institution.

The University of Colorado Denver has a minimum requirement of 3.0 undergraduate grade point average (GPA) for applicants to the Graduate School. The number of applicants admitted to the MA in Applied Geography & Geospatial Science in any year depends, in part, on space availability. The program is competitive, and we generally discourage applicants whose undergraduate GPA is below 3.0. Notification of acceptance or refusal for admission into the program is mailed to the applicant approximately six weeks after the deadline for submission of applications.

Application Process

We accept applications once per year, **before or on February 1st**, for admission in the following fall. As part of the admission review process, applicants are required to submit: a graduate application, statement of purpose that articulates the goals of pursuing a graduate degree in this program, a writing sample, a minimum of three letters of recommendation (academic references are preferred), and official transcripts from all institutions previously attended. The GRE is not required. However, applicants with less than a 3.0 GPA are welcome to submit GRE scores as further evidence of their qualifications.

Programs

- Applied Geography & Geospatial Science, MA (p. 300)
- Environmental Sciences, MS (p. 302)
- Environmental Science Education Graduate Certificate (p. 306)
- Free and Open Source Software for Geospatial Applications Graduate Certificate (p. 307)
- Geographic Information Science Graduate Certificate (p. 309)
- Sustainable Urban Agriculture Graduate Certificate (p. 310)

Faculty

Professors:

Anne Chin, PhD, Arizona State University

Pamela Jansma, PhD, Northwestern University (CLAS Dean)

Professors Emeritus:

Rudi Hartmann, PhD, Technical University of Munich

Wesley E. LeMasurier, PhD, Stanford University

Martin Lockley, PhD, University of Birmingham, England

John W. Wyckoff, PhD, University of Utah

Associate Professors:

Peter Anthamatten, PhD, University of Minnesota

Christy Briles, PhD, University of Oregon

Frederick B. Chambers, PhD, Arizona State University

Rafael Moreno-Sanchez, PhD, Colorado State University

Brian Page, PhD, University of California, Berkeley

Gregory Simon, PhD, University of Washington

Bryan S. Wee, PhD, Purdue University

Assistant Professors:

Benjamin Crawford, PhD, University of British Columbia, Vancouver

Katharine Kelsey, PhD, University of Colorado Boulder

Lisa Kelley, PhD, University of California Berkeley

Associate Professors Clinical Teaching Track:

Matthew Cross, Ph.D, University of Colorado Denver

Assistant Professors Clinical Teaching Track:

Thomas Duster, PhD, University of Notre Dame

Senior Instructors:

Amanda Weaver, PhD, University of Denver

Instructors:

Kirsten Christensen, MSS, MURP, University of Colorado Denver

Yi-Chia Chen, PhD, Louisiana State University

Lecturers:

Richard Ashmore

Tim Connors

Hope Dalton

Richard DeGrandchamp

Amy DePierre

James Fleming

David Murray

Mandy Rees

Geography (GEOG)

GEOG 5050 - Applied Spatial Statistics (3 Credits)

Practice and application of spatial analytical and statistical methods using modern GIS and spatial statistical software. Topics include spatial data handling, interpolation, pattern analysis, cluster detection, visualization, and modeling. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: an introductory course in statistics is strongly recommended for success in this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing (3 Credits)

An in-depth treatment of the use of aerial photographs and other forms of imagery for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Cross-listed with GEOG 4060. Completion of GEOG 2080 with a C or better is recommended for optimal student success. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5070 - Remote Sensing II: Advanced Remote Sensing (3 Credits)

Focuses on digital image processing of satellite and aerial images.

Students explore the nature of digital image data, gain an understanding of image analysis using PCs, and learn about the use of analysis products in the development of GIS databases. Prereq: Graduate standing and GEOG 4060/5060 or permission of instructor. Cross-listed with GEOG 4070. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4060/5060

GEOG 5080 - Introduction to GIS (3 Credits)

Introduces Geographic Information Systems (GIS), including justification, hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data. Includes hands-on use of a GIS workstation. Cross-listed with GEOG 4080. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5081 - Cartography and Computer Mapping (3 Credits)

Provides an introduction to the art and science of cartography (map making). Students will learn about design principles, tools and techniques of map production, culminating in the creation of a high-quality map through hands-on exercises. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: Completion of GEOG 2080 with a C or better is recommended for optimal student success. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5085 - GIS Applications for the Urban Environment (3 Credits)

Takes a more detailed look at basic concepts presented in the introductory GIS course, concentrating on how GIS is used to solve real-world geographic problems. Various GIS applications within both the natural and social sciences are highlighted. The selection of specific topics is flexible, based on the interests of enrolled students. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4085. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5086 - FOSS4G Systems Integration (3 Credits)

Focuses on the integration of different FOSS4G (Free and Open Source Software for Geospatial Applications) software and technologies to create geospatial information systems that access data from different sources, storage structures, and formats to provide information to support decision making processes. Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092. Cross-listed with GEOG 4086. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092

GEOG 5090 - Environmental Modeling with Geographic Information Systems (3 Credits)

Applies raster spatial analysis and modeling to study processes and spatial relationships to support decisionmaking in natural and built environments. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4090. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5091 - Open Source Software for Geospatial Applications (3 Credits)

Students will master the individual use and integration of a stack of the most powerful Free and Open Source Software for Geospatial Applications (FOSS4G) to analyze spatial problems and create Spatial Data Infrastructures in different technological, socio-economic and organizational settings. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4091. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5092 - GIS Programming and Automation (3 Credits)

Students will learn the most commonly used programming language to automate GIS geoprocessing tasks and workflows in the latest versions of the most popular GIS systems. Cross-listed with GEOG 4092. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5095 - Deploying GIS Functionality on the Web (3 Credits)

Covers the core principles and technologies that allow the deployment of geographic information system (GIS) functionality over the World Wide Web. Hands-on exercises make use of the latest commercial software as well as open source technologies. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4095. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5150 - Place, Landscape, and Meaning (3 Credits)

Investigates concepts that constitute place and landscape—how they are not just simply "there". Incorporates different schools of thought to help understand why landscapes are objects inseparable from us and open to multiple interpretations and meanings. Note: this course assumes that students have completed an introductory human geography course. Prereq: Graduate standing. Cross-listed with GEOG 4150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5220 - Environmental Impact Assessment (3 Credits)

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Cross-listed with GEOG 4220, URPL 6549. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5230 - Hazard Mitigation and Vulnerability Assessment (3 Credits)

Examines hazard mitigation and its planning and policy implications, emphasizing how vulnerability assessments play an integral role. Students explore how mitigation minimizes the impacts from hazards and use GIS to conduct a local study. Note: this course assumes that students have completed GEOG 2202 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Note: this course assumes that students have completed GEOG 4080 or GEOG 5080 and/or have a background in public health. Cross-listed with GEOG 4235, HBSC 7235. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOG 5240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOL 4240, 5240 and GEOG 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOL 4251 and GEOL 5251. Restricted to Graduate and Graduate Non-Degree students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5265 - Sustainability in Resources Management (3 Credits)

Sustainability and sustainable development are the dominant economic, environmental and social issues of the 21st century. Follows a multi-disciplinary approach to these concepts. Case studies demonstrate their implementation in different geographical, ecological and socio-economic conditions worldwide. Note: this course assumes that students have completed ENVS 1042 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4265. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5300 - Children's Geographies (3 Credits)

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 5300. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5301 - Population, Culture, and Resources (3 Credits)

Increasing world human populations are examined in the context of regional and global resources. Opposing viewpoints are studied, and students are required to complete a case study of a self-selected issue analyzing viewpoints associated with relevant opposing opinions. Note: Students may not receive credit for this course if they have already received credit for GEOG 3301. Cross-listed with GEOG 4301. Restriction: Restricted to graduate students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5335 - Contemporary Environmental Issues (3 Credits)

Provides an overview of environmental challenges facing society today, focusing on how humans impact and change the environment. Opposing views and environmental policy at the local, state, national, and international levels are explored. Cross-listed with GEOG 4335. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5350 - Environment and Society in the American Past (3 Credits)

Overview of the geographical development of North American society from the late 15th century to the mid-20th century. A comparative regional approach emphasizing relationships between natural resource exploitation, cultural landscape formation and environmental change. Cross-listed with GEOG 4350. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5380 - Anthropocene Futures (3 Credits)

We are living in the "Anthropocene"—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity's intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth's evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a "good" Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors.

Cross-listed with GEOG 4380, ENVS 4380, and ENVS 5380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5420 - The Politics of Nature (3 Credits)

"Examines how economic systems, scientific discovery, institutional policies, and environmental knowledge converge to shape the environment and mediate the way societies understand, manage and respond to environmental changes in both the United States and the developing world. Cross-listed with GEOG 4420. Prereq: Graduate standing. Max hours: 3 Credits."

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5440 - Science, Policy and the Environment (3 Credits)

Examines the social, economic and political forces shaping scientific discovery and the development and enforcement of environmental policy. Students will examine perspectives on issues such as risk, expertise, uncertainty and objectivity that influence the problem-defining, standard-setting and policy-making process. Cross-listed with GEOG 4440. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5640 - Urban Geography: Denver and the U.S. (3 Credits)

Uses a combined lecture/seminar format to explore research themes in urban geography. Topics covered include both historical and contemporary processes of urban development and transformation. Particular emphasis is placed on the U.S. and Colorado's Front Range. Cross-listed with GEOG 4640. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5680 - Urban Sustainability: Perspectives and Practice (3 Credits)

Examines various perspectives on sustainability, including ambiguities and opportunities of sustainability as a conceptual framework. Class also examines what sustainability looks like in practice, using numerous topics such as poverty and urban farming to water and climate change. Cross-listed with GEOG 4680. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5710 - Disasters, Climate Change, and Health (3 Credits)

Provides a review of the impacts of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, and adaptation. Note: this course assumes that students have completed GEOG 2202 or GEOG 3501. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-listed with GEOG 4720/ ENVS 4720/ ENVS 5720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, ENVS 4740, ENVS 5740. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4750, ENVS 4750, and ENVS 5750. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5840 - Independent Study (1-3 Credits)

Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

GEOG 5850 - Understanding And Communicating Field Methods (3 Credits)

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4850 and ENVS 4850/5850. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOG 5900 - Colloquium (1 Credit)

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Graduate standing. Cross-listed with ENVS 4900, ENVS 5900, GEOG 4900. Repeatable. Max Hours: 4 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 4.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

GEOG 5990 - Special Topics In Geography (1-6 Credits)

Course content varies from semester to semester, depending on faculty member teaching the course. Prereq: Graduate standing. Repeatable.

Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5992 - Advanced Regional Field Study (1-6 Credits)

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Note: Instructor permission required. Cross-listed with GEOG 4992, ENVS 4992, ENVS 5992. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

GEOG 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 4995, ENVS 5995, and GEOG 4995. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 Credits)

This seminar allows students to gain a deeper appreciation for historical and contemporary geographical approaches to understanding the relationship between society and the environment through a survey review of seminal concepts, theories and debates that have shaped the discipline. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6700 - Integrated Methods (3 Credits)

Geographers employ a variety of quantitative and qualitative methods in their research. The course presents these methods as a continuum, rather than separate typologies, and reviews the difference between integrated and mixed methods. Students will evaluate how and when to apply various methods to most appropriately elicit data. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6750 - Research Design (3 Credits)

Reviews research framework common to all geographers. Reviews the key steps in designing and executing high-caliber independent research, including topic selection, literature review and data collection analysis. Students will develop competence in applying relevant theories from the natural and social sciences through projects. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6800 - Community-Based Research Practicum (3 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prerequisite: GEOG 6300 with a C or higher. Cross-list ENVS 6800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: GEOG 6300 with a C or higher.

GEOG 6840 - Independent Study: GEOG (1-3 Credits)

Independent research for graduate major students. Prereq: Permission of department. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOG 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOG 8990 - Doctor's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Geology (GEOL)

GEOL 1022 - History of Life (3 Credits)

Non-technical study of fossils through time and their relationships to environments through earth history. Includes discussion of evolution and extinction events and current controversies. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 1073 - Physical Geology: Surface Processes (3 Credits)

This survey course develops a basic understanding of surface processes and landforms in geology. It includes one all-day field trip. Students must also take the accompanying laboratory GEOL 1074. No co-credit with GEOL 1072. Prereq or Co-req: GEOL 1074. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq or Co-req: GEOL 1074

Additional Information: Denver Core Requirement, Biol Phys Sci - Lec.

GEOL 1074 - Physical Geology: Surface Processes Laboratory (1 Credit)

Introduces the basic scientific approach through investigations, observations, and experiments in surface processes and landforms in geology. Students must also take the accompanying lecture GEOL 1073. Prereq or Co-req: GEOL 1073. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq or co-req: GEOL 1073

Additional Information: Denver Core Requirement, Biol Phys Sci - Lab.

GEOL 1083 - Physical Geology: Internal Processes (3 Credits)

This survey course develops a basic understanding of physical geology emphasizing the earth's interior, covering internal processes and properties, with plate tectonics as the underlying theme. Includes one all-day field trip. Students must also take the accompanying laboratory GEOL 1084. No co-credit with GEOL 1082. Prereq or co-req: GEOL 1084. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq or co-req: GEOL 1084

Additional Information: Denver Core Requirement, Biol Phys Sci - Lec.

GEOL 1084 - Physical Geology: Internal Processes Laboratory (1 Credit)
Introduces the basic scientific approach through investigations, observations, and experiments in internal geologic processes and properties of the earth's interior with plate tectonics as the underlying theme. Prereq or co-req: GEOL 1083. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq or co-req: GEOL 1083

Additional Information: Denver Core Requirement, Biol Phys Sci - Lab.

GEOL 1111 - First Year Seminar (3 Credits)

Restriction: Restricted to Freshman level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Freshman level students

GEOL 1115 - Earth Sciences Content (1-3 Credits)

Covers content areas of undergraduate earth sciences. Topics include physical geology; historical geology; oceanography; meteorology; and astronomy. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 1202 - Introduction to Oceanography (3 Credits)

Surveys modern scientific knowledge of the world's oceans. Intended for non-science students, the course offers a non-quantitative introduction to the major facts and principles of physical, chemical, biological, and geological oceanography. The impact of natural and anthropic events on the marine environment are included. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 1400 - Geology of the National Parks (3 Credits)

Combines lecture and laboratory exercises to help students interpret Earth history using the national parks as examples. Students learn to identify the common rocks and minerals, and how to interpret topographic and geologic maps. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 1840 - Independent Study: GEOL (1-3 Credits)

Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

GEOL 2939 - Internship (1-3 Credits)

Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: 15 hours of 2.75 GPA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

GEOL 3011 - Mineralogy (4 Credits)

Principles of mineralogy, including crystallography, crystal chemistry, and a systematic study of the more important nonsilicate and silicate minerals. Origins and occurrences of minerals. Note: this course assumes that students have taken physical geology and college-level chemistry. Max hours: 4 Credits.

Grading Basis: Letter Grade

GEOL 3032 - Geology of Colorado (3 Credits)

Introductory course focused on the geology of Colorado. The course is divided into two parts: the first half covers general principles of geology, and the second is devoted to the observation of rock types, structures, and geologic relationships in the field. Discussion of plate tectonics, rock formation, construction and interpretation of geologic maps, the geologic time scale, geologic provinces of Colorado, evolution of major landforms, formation and development of mineral resources of Colorado, and current topics in environmental geology. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 3102 - Dinosaurs Past and Present (3 Credits)

A broad-based, non-technical new look at the world's most popular prehistoric animals. Stresses the rapid and perennial growth of knowledge about dinosaurs and the relevance of such knowledge in the 20th century. Prereq: Introductory geology and/or biology are recommended. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 3411 - Introductory Paleontology (4 Credits)

Studies invertebrate fossils, including a survey of the organic world and its history in the geological past. Includes an introduction to evolution and paleoecology, and discussion of the uses of fossils in geologic correlations. Note: this course assumes that students have taken introductory geology-surface processes or an introductory biology course. Max hours: 4 Credits.

Grading Basis: Letter Grade

GEOL 3421 - Sedimentation and Stratigraphy (4 Credits)

Introduces the principles of sedimentology and stratigraphy. Emphasis is on dynamic processes within sedimentary environments and the resulting stratigraphic record. Prereq: GEOL 1082. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: GEOL 1082

GEOL 3840 - Independent Study: GEOL (1-3 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOL 3939 - Internship (1-3 Credits)

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Note: students must work with the Experiential Learning Center advising to complete a course contract and gain approval. Prereq: Junior standing or higher. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: junior standing or higher

GEOL 4010 - Landscape Biogeochemistry (3 Credits)

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Prereq: GEOG 1202 or GEOL 1072 or permission of instructor. Cross-listed with GEOG 4010/ENVS 5010.

Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 1202 or GEOL 1072

GEOL 4020 - Earth Environments and Human Impacts (3 Credits)

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Cross-listed with ENV5 5020, GEOG 4020. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOL 4030 - Environmental Geology (3 Credits)

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Prereq: Senior standing. Cross-listed with ENV5 5030 and GEOL 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Senior standing.

GEOL 4111 - Field Methods In Geology (3 Credits)

Introduction to the basic methods of geologic mapping (metamorphic, sedimentary, and igneous rocks), including use of the Brunton compass and Jacob Staff, as well as preparation of measured stratigraphic sections, geologic maps, and geologic cross-sections. Note: GEOL 1072 or GEOG 1202 required, GEOL 3421 strongly recommended. Prereq: GEOG 1202 or GEOL 1072. Cross-listed with GEOL 5111. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 1202 or GEOL 1072

GEOL 4240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Prereq: GEOG 1202 or GEOL 1072 (required) and GEOG 3232 strongly recommended. Cross-listed with GEOG 4240, 5240 and GEOL 5240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 1202 or GEOL 1072

GEOL 4251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOG 5251 and GEOL 5251. Prereq: Students must have completed GEOG 1202 or GEOL 1072 or have graduate standing or gain instructor approval in order to register for this course. GEOG 3232 is strongly recommended, though not required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 1202 or GEOL 1072 or graduate standing

GEOL 4270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Prereq: GEOG 1202 or GEOL 1072. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 1202 or GEOL 1072

GEOL 4780 - Engineering Geology (4 Credits)

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with GEOL 5780 and CVEN 4780. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 2121 and MATH 2411

GEOL 4840 - Independent Study: GEOL (1-3 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

GEOL 4880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOL 4995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: GEOL 1072 and GEOL 1082. Cross-listed with GEOL 5995. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Prereq: GEOL 1072 and GEOL 1082

GEOL 5001 - RM-MSMSP Earth Processes I (4 Credits)

Systematic study of geological concepts, rock and mineral formation, plate tectonics, volcanism and earthquakes, landforms and weathering, historical environmental interpretation. Includes a field component. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: students should obtain permission of project director prior to enrolling in this course. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5002 - RM-MSMSP Earth Sciences II - Sedimentology and Paleontology (4 Credits)

Field and lecture course building on Earth Sciences I, which covers internal earth processes. Students learn about erosional processes and how sedimentary rocks are deposited and may be preserved; the different ways fossils are preserved; describing rocks in the field; and collecting, preparing and describing fossils. Provides an overview of the geology of the area so that students can place the detailed studies in context. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: GEOL 5001. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: GEOL 5001

GEOL 5003 - RM-MSMSP: Earth Science in Context (4 Credits)

Designed for teachers in the RM-MSMSP program. Topics include global climate change, glaciers, coastal geology, volcanism, and their effects on culture. Monuments such as Florissant Fossil Beds, Ice Core, Cave of the Winds and a quarry will be visited. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5004 - RM-MSMSP Research Experience for Teachers - Geology Cohort (1-6 Credits)

A five-week research exploration in which RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands-on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: credit may not apply toward any CLAS degree. Prereq: Graduate standing. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5030 - Environmental Geology (3 Credits)

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and ENVS 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5111 - Field Methods in Geology (3 Credits)

Introduction to the basic methods of geologic mapping (metamorphic, sedimentary, and igneous rocks), including use of the Brunton compass and Jacob Staff, as well as preparation of measured stratigraphic sections, geologic maps, and geologic cross-sections. Note: this course assumes that students have completed GEOL 1072 or GEOG 1202.

GEOL 3421 is strongly recommended. Prereq: Graduate standing. Cross-listed with GEOL 4111. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOG 4240, 5240 and GEOL 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOG 5251 and GEOL 4251. Restriction: Restricted to Graduate and Graduate Non-Degree students. GEOG 3232 is strongly recommended, though not required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5780 - Engineering Geology (4 Credits)

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Note: this course assumes that students have completed MATH 2411 and CVEN 2121. Prereq: Graduate standing. Cross-listed with GEOL 4780 and CVEN 5780. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOL 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5950 - Master's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOL 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with GEOL 4995. Repeatable. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6840 - Independent Study: GEOL (1-3 Credits)

Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6950 - Master's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOL 6960 - Master's Project (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Environmental Science (ENVS)

ENVS 5010 - Landscape Biogeochemistry (3 Credits)

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Note: this course assumes that students have completed an introductory college-level physical geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4010/GEOL 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5020 - Earth Environments and Human Impacts (3 Credits)

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Cross-listed with GEOG 4020, GEOL 4020. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5030 - Environmental Geology (3 Credits)

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5280 - Environmental Hydrology (4 Credits)

Examination of hydrologic processes in relation to climate, soils, vegetation, land-use practices, and human interactions. Natural scientific perspectives emphasized; field and laboratory included. Note: this course assumes that students have completed GEOG 1202 and one of: 1) GEOG 3232; 2) GEOG 4240/GEOL 4240/GEOG/5240; 3) GEOG 4010/GEOL 4010/ENVS 5000. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5300 - Children's Geographies (3 Credits)

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 4300. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5305 - Water Quality and Resources (3 Credits)

Introduces water resources aimed at students with little or no background in the field. This is a broad course covering topics ranging from the physical aspects of water to water politics and international law. While the course is largely a lecture format, discussion of current issues is a significant part of the class. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with GEOG 4305. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5340 - Equity & Culture in Science Education: Local/Global (3 Credits)

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 5340 and SCED 4340. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5380 - Anthropocene Futures (3 Credits)

We are living in the “Anthropocene”—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity’s intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth’s evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a “good” Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4380, GEOG 5380, and ENVS 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5403 - Unsaturated Zone Hydrology (3 Credits)

Focuses on water and contaminant transport through the unsaturated zone, infiltration and drainage, and heat and gas transport. Students learn to design, perform field installation, and collect data in order to model and predict contaminant movement on/off site. Note: this course assumes that students have prior coursework in chemistry, physics, or calculus. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5410 - Aquatic Chemistry (3 Credits)

Course objectives are to: (1) identify and understand chemical and physical principles and processes that control the composition of natural water, (2) prepare students to critically evaluate scientific literature and experimental design related to water quality and environmental remediation, and (3) examine the validity of environmental water data. Note: this course assumes that students have completed general chemistry and/or CHEM 4700. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5450 - Urban Food and Agriculture: Perspectives and Research (3 Credits)

Provides an overview of research & practices in urban farming. Critically reviews emergent models of local food production/distribution. Compares new practices to traditional agribusiness. Assesses the prospects for solving sustainability problems within the modern agro-food system. Note: this course assumes that students have completed GEOG 3401. Prereq: Graduate standing. Cross-list GEOG 4450. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5460 - Sustainable Urban Agriculture Field Study I (3 Credits)

Provides a field-based overview of urban farm planning & management. Topics: range/land conservation, native/invasive species, water distribution, animal husbandry, government interaction, local markets, community relations, conservation easements and issues pertaining to urban farming. Note: this course assumes that students have completed ENVS 5450. Prereq: Graduate standing. Cross-list GEOG 4460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5470 - Sustainable Urban Agriculture Field Study II (3 Credits)

Provides a field-based overview of current practices in local agricultural production. Emphasis will be placed on sustainable practices and their most efficient situation. Special consideration will be given to plausible solutions for food insecure communities both local and global. Note: this course assumes that students have completed ENVS 5450 and 5460. Prereq: Graduate standing. Cross-listed with GEOG 4470. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5480 - Urban Vegetable CSA: Planning, Production&Distribution (3 Credits)

This course outlines the planning, production, and distribution in an active urban vegetable CSA (community supported agriculture) model. It is offered as a part of the GES Sustainable Urban Agriculture Certificate. Cross-listed with GEOG 4480. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5500 - Topics in Environmental Sciences (1-6 Credits)

Topics may vary from one offering to the next. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5600 - Applied Statistics for the Natural Sciences (3 Credits)

Surveys statistical techniques including: quick review of basic statistics, tests for normality and outliers, display of data; simple and multiple regression; ANOVA and its relation to regression. Emphasis on computer or stat-pak analysis and interpretation of statistical results. Note: this course assumes that students have completed college algebra and GEOG 3080 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4770. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5620 - Health Risk Communication (3 Credits)

Acquaints students with contemporary theory, research, and practice in health risk communication. Cross-listed with COMM 5620/4620 and PBHL 4620. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5650 - Environmental Education (3 Credits)

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Prereq: Graduate standing. Cross-listed with ENVS 4650 and SCED 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5700 - Synthesis for Interdisciplinary Science (3 Credits)

Synthesis is an approach in interdisciplinary research and education that links ideas, data and methods. This course develops synthesis skills through the lens of systems theory. It includes exercises for synthetic thinking, examination of integrative tools, and a service-learning project. Cross-listed with GEOG 4700. Breadth and depth training in environmental sciences. Interest in interdisciplinary collaboration. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-list GEOG 4720/ GEOG 5720/ ENVS 4720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5730 - Air Quality Modeling and Analysis (3 Credits)

Emphasizes the use of air dispersion modeling tools. Topics include: sources and effects of air pollution, use of the WWW, and analysis of modeling results. Note: For graduate students in environmental sciences or engineering, and for those working in the environmental field. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5731 - Mountain Biogeography (4 Credits)

This course utilizes the close proximity of the Rocky Mountains to examine altitudinal influences on species distributions. Topics include species patterns and distributions, disturbance, climate impacts, forest management and sustainability. Note: Please add this course note: A three-day field trip within Colorado will occur the first weekend of the Fall semester, and is highly encouraged. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with GEOG 5731. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, GEOG 5740, ENVS 4740. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4750, GEOG 5750, and ENVS 4750. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5840 - Independent Study: ENVS (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

ENVS 5850 - Understanding and Communicating Field Methods (3 Credits)

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with ENVS 4850 and GEOG 4850/5850. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ENVS 5900 - Colloquium (1 Credit)

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Graduate standing. Cross-listed with ENVS 4900, GEOG 4900 and 5900. Repeatable. Max Hours: 4 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 4.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ENVS 5992 - Advanced Regional Field Study (1-6 Credits)

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Cross-listed with ENVS 4992, GEOG 4992, GEOG 5992. Note: Instructor permission required. Repeatable. Max Hours: 12 Credits.

Grading Basis: GRD

Repeatable. Max Credits: 12.

ENVS 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Prereq: Graduate standing. Cross-listed with ENVS 4995, GEOG 4995, and GEOG 5995. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6000 - Environmental Sciences Seminar (1 Credit)

Student and faculty presentations of UCDHSC research projects and other current environmental sciences topics. All environmental sciences students are encouraged to attend, but credit is given only to students who present seminars. Two semesters of this course are required to receive a M.S. in Environmental Science degree: these students must register for this seminar and give presentations the first semester they are in the M.S.E.S. program and the semester in which they defend their master's project. Prereq: Graduate standing. Term offered: fall.

Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6002 - Research Topics in Environmental Sciences (3 Credits)

Introduces research and professional development in the environmental sciences, focusing on current issues and trends in the field, methods of developing research and project proposals, and defense of a proposal written during the semester. Students are introduced to the environmental sciences faculty and their research programs. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6004 - Research Methods in Environmental Science (3 Credits)

This core MS Environmental Science course will explore a range of methods commonly encountered in environmental science fields and how to develop a research project and proposal. Prereq: ENVS 6002.

Restriction; Restricted to graduate-level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ENVS 6002 Restriction; Restricted to graduate-level students.

ENVS 6100 - Research Topics in Environmental Management (3 Credits)

This is one of 4 core MS Environmental Science courses that will review and apply the principles and methods involved in designing and implementing effective environmental management. Prereq: Must be graduate level and have completed ENVS 6002. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ENVS 6002 Restriction; Restricted to graduate-level students.

ENVS 6200 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Cross-listed with CVEN 5494, HBSC 7340. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6210 - Human Health and Environmental Pollution (3 Credits)

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution. Cross-listed with HBSC 7210. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6220 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Note: this course assumes that students have completed one year of college chemistry and one year of college biology. Prereq: Graduate standing. Cross-listed with HBSC 7360. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6230 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Note: this course assumes that students have completed a basic statistics course. Prereq: Graduate standing. Cross-listed with HBSC 7310. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6800 - Community-Based Research Practicum (3 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prereq: ENVS 6002 with a grade of C or higher. Cross-listed with GEOG 6800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ENVS 6002 with a C or higher.

ENVS 6840 - Independent Study: ENVS (1-3 Credits)

Prereq: Graduate standing. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 11 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 11.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENVS 6960 - Master's Report (3-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Applied Geography & Geospatial Science, MA

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) to see Geography and Environmental Sciences department information.

Program Director: Rafael Moreno

Office: North Classroom

Fax: 303-315-7556

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Web site: MS in Environmental Sciences

Introduction

In the United States and around the world, balancing the preservation of the natural environment with the imperatives of economic development along with concerns for social well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions. Graduates of the M.A program in Applied Geography and Geospatial Science will have the knowledge, training, and tools to become leaders in this rapidly growing field.

The program's research focus is human-environment interaction, a longstanding hallmark of the discipline of Geography. Within this area of critical geographic inquiry, the program emphasizes geospatial science, a federally recognized STEM subject area that includes geographic information systems (GIS) as well as computer cartography, remotely sensed image analysis, and spatial statistics. Students apply their geospatial research skills in the context of hands-on, faculty-led research projects that stress professional development through community engagement and interactive service learning.

Financial Aid

There are three types of financial aid available: teaching assistant student hourly positions; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available aid and positions. All other aid should be requested through the

CU Denver Financial Aid Office
Student Commons Building, 5th floor
Campus Box 125
P.O. Box 173364
Denver, CO 80217-3364
Telephone: 303-315-1850

Internships

Students in the Applied Geography & Geospatial Science MA program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to geographical sciences. The Experiential Learning Center is located in the Tivoli Student Union, Suite 260. Telephone: 303-556-2250. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

The program is offered by the faculty of the Department of Geography and Environmental Sciences in the College of Liberal Arts and Sciences.

Students undertake 36 credit hours over a two-year period. These 36 hours include required core classes (6-9 credit hours), a required service learning studio (3 credit hours), and required geo-spatial science coursework (12 credit hours). Students can elect to undertake either of two tracks: the first "coursework" track involves a further 15 hours of elective courses, whereas the second "thesis" track involves 9 hours of electives, and preparation of a written thesis (3 credits).

1. Students must complete a minimum of 36 credit hours.
2. Students must complete a minimum of 36 graduate (5000-level) or higher credit hours.
3. Students must earn a minimum grade of B (3.0) or better in all core courses, a B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. Many of the electives have prerequisites# students must have met these requirements in order to take the course.
2. Courses applied to either a certificate* or an MA degree may later be applied toward the other if all pertinent coursework is completed within a five year time period.
3. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
4. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.
5. Many of the electives have pre-requisites; students must have met these requirements in order to take the course.

6. Students may transfer up to 9 hours of approved graduate-level credit into the program. These courses must be approved by the Graduate Director and they may not replace core courses.
7. Students may count up to 6-credit hours of independent, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
8. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor)
9. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
10. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
11. Students may enroll in thesis preparation and writing hours only after submission of signed committee form, which requires approval of the thesis proposal.
12. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.
13. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/MS website.
14. Work submitted for the environmental sciences options must have a grade of B (3.0) or better.
15. GES offers Geospatial, Environmental Education, and Urban Agriculture independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the Geographic Information Science Graduate Certificate (p. 309), Sustainable Urban Agriculture Graduate Certificate (p. 310), and Environmental Science Education Graduate Certificate (p. 306) descriptions.)

Required Courses

Code	Title	Hours
<i>Take all of the following:</i>		9
GEOG 5050	Applied Spatial Statistics	3
GEOG 6300	Foundations Seminar in Human-Environmental Interaction	3
GEOG 6800	Community-Based Research Practicum	3

Geospatial Science and Methods Courses

Code	Title	Hours
<i>Take 12 credit hours of the following</i>		12
CSCI 5559	Database Systems	3
CVEN 5382	Geospatial Data Development	3
CVEN 5383	GIS Analysis -- Theory and Practice	3
CVEN 5385	GIS Relational Database Systems	3
ENVS 6200	Risk Assessment	3
ENVS 6220	Toxicology	3
ENVS 6230	Environmental Epidemiology	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	3

GEOG 5081	Cartography and Computer Mapping	3
GEOG 5085	GIS Applications for the Urban Environment	3
GEOG 5090	Environmental Modeling with Geographic Information Systems	3
GEOG 5091	Open Source Software for Geospatial Applications	3
GEOG 5092	GIS Programming and Automation	3
GEOG 5095	Deploying GIS Functionality on the Web	3
GEOG 5235	GIS Applications in the Health Sciences	3

Electives

Code	Title	Hours
<i>Take 9 credit hours of Elective courses (up to 6 hours can be taken outside the Department of Geography & Environmental Sciences, as approved by advisor)</i>		9
<i>Take a minimum of one course from each list below.</i>		

Human Geography

Code	Title	Hours
ENVS 5305	Water Quality and Resources	3
ENVS 5340	Equity & Culture in Science Education: Local/Global	3
ENVS 5450	Urban Food and Agriculture: Perspectives and Research	3
ENVS 5460	Sustainable Urban Agriculture Field Study I	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5265	Sustainability in Resources Management	3
GEOG 5300	Children's Geographies	3
GEOG 5301	Population, Culture, and Resources	3
GEOG 5335	Contemporary Environmental Issues	3
GEOG 5350	Environment and Society in the American Past	3
GEOG 5420	The Politics of Nature	3
GEOG 5440	Science, Policy and the Environment	3
GEOG 5640	Urban Geography: Denver and the U.S.	3
GEOG 5680	Urban Sustainability: Perspectives and Practice	3
GEOG 5710	Disasters, Climate Change, and Health	3
GEOG 5900	Colloquium	1

Physical Geography

Code	Title	Hours
ENVS 5020	Earth Environments and Human Impacts	3
ENVS 5280	Environmental Hydrology	4
ENVS 5731	Mountain Biogeography	4
GEOG 5240	Applied Geomorphology	3
GEOG 5251	Fluvial Geomorphology	3
GEOG 5270	Glacial Geomorphology	3
GEOG 5740	Soil Science and Geography	3
or ENVS 5740	Soil Science and Geography	
GEOG 5995	Global Study Topics	3-9

Thesis Option

Code	Title	Hours
<i>Take the following</i>		6
GEOG 6750	Research Design	3
GEOG 6950	Master's Thesis	3

Non-Thesis Option

Code	Title	Hours
<i>Take a minimum of six additional credit hours from the lists above or approved by an advisor.</i>		6

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/ges/programs/master-arts/ma-learning-goals-objectives/>).

Environmental Sciences, MS

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 287) to see Geography and Environmental Sciences department information.

Program Director: Rafael Moreno

Office: North Classroom

Fax: 303-315-7556

E-mail: Rafael.Moreno@ucdenver.edu

Website: MS in Environmental Sciences (<https://clas.ucdenver.edu/ges/programs/master-arts-applied-geography-geospatial-science/>)

Overview

Environmental Sciences is a multidisciplinary study of the natural/physical environment. Academic fields involved in environmental sciences include chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics and the health sciences. Students planning to pursue the MS in Environmental Sciences must either have earned a bachelor's degree or have taken significant course work in the natural/physical sciences or engineering and completed several other prerequisites (see the following graduate information).

Environmental careers encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. Students interested in environmental issues and careers should investigate all our program options and specializations before deciding which path to follow. At CU Denver, the MS in Environmental Sciences emphasizes the natural/physical sciences and engineering with the addition of the social sciences and humanities.

The MS in Environmental Sciences degree is designed to provide training in natural/physical sciences and social sciences. The goals of the program are (1) to enhance the interdisciplinary communication and analytical skills of the student, and (2) to provide a multidisciplinary approach for intensive and hands-on studies of particular environmental issues. Students will receive instruction in the physical and biological dynamics of various ecosystems, environmental engineering and socioeconomic issues associated with environmental analysis.

Graduates of the MS in Environmental Sciences program are involved in many different areas, such as reviewing environmental impact statements, monitoring groundwater quality or air quality and communicating with the public. Our students have great success finding employment in various agencies (U.S. Environmental Protection Agency, U.S. Geological Survey, Colorado State Department of Public Health and Environment) and private-sector environmental consulting and engineering firms.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Core Faculty of the M.S. in Environmental Sciences Program

Professors:

Anne Chin, Geography and Environmental Sciences
Pamela Jansma, Geography and Environmental Sciences

Associate Professors:

Peter Anthamatten, Geography and Environmental Sciences
Christy Briles, Geography and Environmental Sciences
Frederick Chambers, Geography and Environmental Sciences
Rafael Moreno-Sanchez, Geography and Environmental Sciences
Brian Page, Geography and Environmental Sciences
Gregory Simon, Geography and Environmental Sciences
Bryan Wee, Geography and Environmental Sciences

Assistant Professors:

Benjamin Crawford, Geography and Environmental Sciences
Lisa Kelley, Geography and Environmental Sciences
Katharine Kelsey, Geography and Environmental Sciences

Associate Professors C/T:

Matthew Cross, Geography and Environmental Sciences

Assistant Professors C/T:

Thomas Duster, Geography and Environmental Sciences

Senior Instructors:

Amanda Weaver, Geography and Environmental Sciences

Instructors:

Kirsten Christensen, Geography and Environmental Science

Lecturers:

Alicia Cowart, Geography and Environmental Sciences
Richard DeGrandchamp, Geography and Environmental Sciences
Rudi Hartmann, Geography and Environmental Sciences

Faculty Affiliates to the M.S. in Environmental Sciences Program

Professors:

N.Y. Chang, Civil Engineering
Diana F. Tomback, Integrative Biology
David Mays, Civil Engineering
Michael J. Greene, Integrative Biology

Associate Professors:

Leo P. Bruederle, Integrative Biology
Greg Cronin, Integrative Biology
Yong Liu, Chemistry
Timberly M. Roane, Integrative Biology
Alan Vajda, Integrative Biology
Michael Wunder, Integrative Biology

Assistant Professors:

Brian Buma, Integrative Biology
Annika Mosier, Integrative Biology

Financial Aid

There are four types of financial aid available: student hourly teaching assistantship; research assistantship positions funded by grants to specific program faculty; paid internships and part-time employment organized through the department with professional organizations; and the regular package of financial aid (primarily loans) available through the financial aid office on the Denver campus. Our program also accommodates working students and offers many of core classes one/week or in the evening to accommodate work schedules. Incoming students will be automatically considered for program-distributed assistance at the time of admission to the program. Continuing students will be regularly apprised of available aid and positions. All other aid should be requested through the CU Denver Financial Aid Office, Student Commons Building 5th floor, Campus Box 125, P.O.Box 173364, Denver, CO 80217-3364. Telephone: 303-315-1850.

Internships

Students in the MS in Environmental Sciences program are strongly encouraged to contact the Experiential Learning Center for internships and paid positions related to environmental sciences. The Experiential Learning Center is located in the Tivoli Student Union, Suite 260. Telephone: 303-556-2250. The LynxConnect Career Center also located in the Tivoli Student Union Suite 439. Many students have had internships in federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Geological Survey.

Program Requirements

1. Students must complete a minimum of 36 credit hours.
2. Students must complete a minimum of 36 graduate (5000-level) or higher credit hours.
3. Students must earn a minimum grade of B (3.0) or better in all core courses, a B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the

program GPA. Students cannot complete program or ancillary course requirements as pass/fail.

4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. Many of the elective courses have prerequisites; student must have met these requirements in order to take the course.
2. A given course may only be used for one option, even if it is listed in several options. Other courses maybe offered that will be acceptable as electives with approval of the option advisor and the director of the program.
3. Courses applied to either a certificate* or an MS degree may later be applied toward the other if all pertinent coursework is completed within a five year time period.
4. Students should fill out and submit all relevant department forms for their files. Importantly, all petitions for course substitutions and identification of where courses fit as electives, with the subsequent approval/denial, should be submitted to this file.
5. By the end of the first semester, each student should identify and declare whether or not s/he is pursuing the thesis or non-thesis option. If intending to pursue the thesis option, the student should identify and gain agreement from a content advisor for guiding the thesis, filling out and submitting the appropriate departmental form.
6. Students may count up to 6-credit hours of independent study, with a maximum of 3-credit hours per independent study towards elective credit in the major as approved by the Graduate Director. No more than 3 credit hours of independent study may be taken with the same instructor and they may not be taken in the same term.
7. Students may count up to 6-credit hours of internship in total, but 3-credit hours per internship and per entity (sponsorship may be with same professor sponsor).
8. Students may not count 4000-level courses towards electives in the program; this may be petitioned to the Graduate Committee in exceptional cases.
9. Students may take a maximum of 2 online courses, or petition to the GES Graduate Committee beyond two.
10. Students may enroll in thesis preparation and writing hours only after submission of a signed committee form, which requires approval of the thesis proposal.
11. Students will not receive a grade for thesis preparation and writing hours until the thesis is successfully defended.
12. Students must follow the graduate school deadlines for submission of paperwork for the graduation application, comprehensive exam, and any other deadlines. Links to these can be found on the GES/ MS website.
13. Work submitted for the environmental sciences options must have a grade of B (3.0) or better.
14. All students must complete two (2) GES-approved, graduate-level techniques/methods-based class (not including the practicum).
15. Elective credits may be completed using up to three (3) credit hours of Independent Study and/or (3) credit hours of Internship Study.
16. The Geospatial, Environmental Education, and Sustainable Urban Agriculture options of the program lead towards independent graduate certificates. These certificates may be earned without entrance into the MS in environmental sciences program. (See the Geographic Information Science Graduate Certificate, Sustainable

Urban Agriculture Graduate Certificate, and Environmental Science Education Graduate Certificate descriptions.)

17. The number of credits required to reach 36 total credits will depend on (a) whether a student is on Plan 1 or Plan 2, and (b) how many credit hours are compiled in the core classes.
18. See the MS in Environmental Sciences website for a complete list of elective courses. These include courses offered in both GES and our partner departments. The degree is offered through the College of Liberal Arts and Sciences with the cooperation of the College of Engineering, Design and Computing. In addition, some courses offered by the College of Architecture and Planning, the School of Public Affairs and the Business School are relevant and applicable to the program.

The MS in Environmental Sciences is a 36-hour program that provides students with two alternate plans: Plan I is a thesis path, while Plan II is a non-thesis path.

General requirements for the program include the following:

Required Courses

Code	Title	Hours
<i>Take the following</i>		6
ENVS 6002	Research Topics in Environmental Sciences	3
GEOG 5265	Sustainability in Resources Management	3
or GEOG 5440	Science, Policy and the Environment	

Physical/Ecological Core courses

Code	Title	Hours
<i>Take at least four courses (12 credits), with one course from each of the content spheres: atmosphere, biosphere, hydrosphere, lithosphere/cryosphere.</i>		12

Atmosphere

Code	Title	Hours
ENVS 5720	Climate Change: Causes, Impacts and Solutions	3
ENVS 5730	Air Quality Modeling and Analysis	3

Biosphere

Code	Title	Hours
ENVS 5010	Landscape Biogeochemistry	3
ENVS 5731	Mountain Biogeography	4
ENVS 5750	Beeography: Geography of Bees	4

Hydrosphere

Code	Title	Hours
ENVS 5280	Environmental Hydrology	4
ENVS 5410	Aquatic Chemistry	3
GEOG 5251	Fluvial Geomorphology	3
or GEOL 5251	Fluvial Geomorphology	

Lithosphere/Cryosphere

Code	Title	Hours
ENVS 5340	Equity & Culture in Science Education: Local/Global	3

ENVS 5740	Soil Science and Geography	3
GEOG 5240	Applied Geomorphology	3

Electives

Code	Title	Hours
<i>Take 12 credits from the following</i>		12
BIOL 5154	Conservation Biology	3
BIOL 5335	Plant Science	4
BIOL 5345	Flora of Colorado	4
BIOL 5415	Microbial Ecology	3
BIOL 5460	Environmental Toxicology	3
BIOL 6764	Biological Data Analysis	4
CVEN 5333	Surface Water Hydrology	3
CVEN 5334	Groundwater Hydrology	3
CVEN 5335	Vadose Zone Hydrology	3
ENVS 5020	Earth Environments and Human Impacts	3
ENVS 5305	Water Quality and Resources	3
ENVS 5450	Urban Food and Agriculture: Perspectives and Research	3
ENVS 5460	Sustainable Urban Agriculture Field Study I	3
ENVS 5470	Sustainable Urban Agriculture Field Study II	3
ENVS 5650	Environmental Education	3
ENVS 5939	Internship	1-6
ENVS 6200	Risk Assessment	3
ENVS 6230	Environmental Epidemiology	3
ENVS 6800	Community-Based Research Practicum	3
ENVS 6840	Independent Study: ENVS	1-3
GEOG 5050	Applied Spatial Statistics	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	3
GEOG 5080	Introduction to GIS	3
GEOG 5081	Cartography and Computer Mapping	3
GEOG 5085	GIS Applications for the Urban Environment	3
GEOG 5090	Environmental Modeling with Geographic Information Systems	3
GEOG 5091	Open Source Software for Geospatial Applications	3
GEOG 5092	GIS Programming and Automation	3
GEOG 5095	Deploying GIS Functionality on the Web	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5235	GIS Applications in the Health Sciences	3
GEOG 5301	Population, Culture, and Resources	3
GEOG 5335	Contemporary Environmental Issues	3
GEOG 5350	Environment and Society in the American Past	3
GEOG 5420	The Politics of Nature	3
GEOG 5710	Disasters, Climate Change, and Health	3
GEOG 5995	Global Study Topics	3-9
GEOG 6700	Integrated Methods	3
GEOG 6800	Community-Based Research Practicum ¹	3

¹ Thesis students may also count ENVS 6800 Community-Based Research Practicum as an elective (the course is required for non-thesis students).

Degree Specializations

To fulfill the elective requirement, students may choose to fulfill one of the following Specialization Options offered in environmental sciences: Climate System; Ecosystems; Environmental Health; Environmental Science Education; Environmental Science, Policy and Management; Geospatial Analysis; Sustainable Urban Agriculture; or Water Systems. Students must have the prerequisites for each course and must meet the requirements listed in the notes below. Contact the option advisor for the particular option of interest before starting. Upon graduation, the option will be noted on the student's transcript.

Climate Systems

Advisors: Ben Crawford (Benjamin.Crawford@ucdenver.edu) & Kathy Kelsey (Katharine.Kelsey@ucdenver.edu)

Code	Title	Hours
<i>Take all of the following courses:</i>		6
ENVS 5500	Topics in Environmental Sciences (Urban Climate and Air Quality)	3
ENVS 5720	Climate Change: Causes, Impacts and Solutions	3

Code	Title	Hours
<i>Take two of the following:</i>		6
ENVS 5010	Landscape Biogeochemistry	3
ENVS 5730	Air Quality Modeling and Analysis	3
ENVS 5731	Mountain Biogeography	4
GEOG 5270	Glacial Geomorphology	3

Ecosystems

Advisor: Christy Briles (Christy.Briles@ucdenver.edu)

Code	Title	Hours
<i>Take the following courses</i>		6
BIOL 5415	Microbial Ecology	3
ENVS 5010	Landscape Biogeochemistry	3

Code	Title	Hours
<i>Take two of the following</i>		6
BIOL 5154	Conservation Biology	3
BIOL 5335	Plant Science	4
BIOL 5345	Flora of Colorado	4
BIOL 5415	Microbial Ecology	3
BIOL 5460	Environmental Toxicology	3
BIOL 6764	Biological Data Analysis	4
ENVS 5410	Aquatic Chemistry	3
ENVS 5720	Climate Change: Causes, Impacts and Solutions	3
ENVS 5740	Soil Science and Geography	3
ENVS 5750	Beeography: Geography of Bees	4
ENVS 5731	Mountain Biogeography	4

Environmental Health

Advisor: Peter (Peter.Anthamatten@ucdenver.edu)Anthamatten

Code	Title	Hours
<i>Take a total of 12 credits from the following lists.</i>		12
<i>Take a minimum of one course from each list.</i>		

Code	Title	Hours
<i>Take one of the following methods courses</i>		3
BIOS 6601	Applied Biostatistics I	3
GEOG 5235	GIS Applications in the Health Sciences	3
ENVS 6220	Toxicology	3
or EHOH 6616	Environmental & Occupational Toxicology	
ENVS 6230	Environmental Epidemiology	3
or EHOH 6617	Environmental & Occupational Epidemiology	

Code	Title	Hours
<i>Take one of the following applications courses</i>		3
EHOH 6619	Environmental Exposures and Health Effects	3
EHOH 6624	Infectious Diseases, Environmental Contexts	3
EHOH 6627	Water Quality and Public Health	3
EHOH 6635	Climate Change and Health	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5710	Disasters, Climate Change, and Health	3

Environmental Science Education

Advisor: Bryan Wee (Bryan.We@ucdenver.edu)

Code	Title	Hours
<i>Take the following</i>		6
ENVS 5650	Environmental Education	3
GEOG 5150	Place, Landscape, and Meaning	3

Code	Title	Hours
<i>Take two of the following</i>		6
GEOG 5300	Children's Geographies	3
or ENVS 5300	Children's Geographies	
GEOG 5440	Science, Policy and the Environment	3
GEOG 5995	Global Study Topics	3-9
ENVS 5340	Equity & Culture in Science Education: Local/Global	3
or SCED 5340	Equity & Culture in Science Education: Local/Global	

Environmental Science, Policy and Management

Advisors: Rafael Moreno (Rafael.Moreno@ucdenver.edu) and Gregory Simon (Gregory.Simon@ucdenver.edu)

Code	Title	Hours
<i>Take the following courses</i>		6
GEOG 5265	Sustainability in Resources Management	3
GEOG 5440	Science, Policy and the Environment	3

Code	Title	Hours
<i>Take two of the following</i>		6
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5301	Population, Culture, and Resources	3
GEOG 5335	Contemporary Environmental Issues	3
GEOG 5420	The Politics of Nature	3
GEOG 5680	Urban Sustainability: Perspectives and Practice	3
GEOG 5710	Disasters, Climate Change, and Health	3
GEOG 5995	Global Study Topics	3-9

ENVS 5305	Water Quality and Resources	3
ENVS 6200	Risk Assessment	3

Geospatial Analysis Option

Advisors: Peter (Peter.Anthamatten@ucdenver.edu) Anthamatten or Rafael Moreno (Rafael.Moreno@ucdenver.edu)

Code	Title	Hours
<i>Take the following</i>		6
GEOG 5080	Introduction to GIS	3
GEOG 5090	Environmental Modeling with Geographic Information Systems	3

Code	Title	Hours
<i>Take two of the following</i>		6
CVEN 5385	GIS Relational Database Systems	3
GEOG 5050	Applied Spatial Statistics	3
GEOG 5091	Open Source Software for Geospatial Applications	3
GEOG 5092	GIS Programming and Automation	3
GEOG 5095	Deploying GIS Functionality on the Web	3

Sustainable Urban Agriculture

Advisor: Amanda Weaver (Amanda.Weaver@ucdenver.edu)

Code	Title	Hours
<i>Take the following</i>		6
ENVS 5450	Urban Food and Agriculture: Perspectives and Research	3
ENVS 5460	Sustainable Urban Agriculture Field Study I	3

Code	Title	Hours
<i>Take two of the following</i>		6
ENVS 5470	Sustainable Urban Agriculture Field Study II	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5085	GIS Applications for the Urban Environment	3
GEOG 5235	GIS Applications in the Health Sciences	3
GEOG 5640	Urban Geography: Denver and the U.S.	3
GEOG 5680	Urban Sustainability: Perspectives and Practice	3

Water Systems

Advisors: Anne Chin (Anne.Chin@ucdenver.edu) and Tom Duster (Thomas.Duster@ucdenver.edu)

Code	Title	Hours
<i>Take the following</i>		7
ENVS 5280	Environmental Hydrology	4
ENVS 5410	Aquatic Chemistry	3

Code	Title	Hours
<i>Take two of the following</i>		6
CVEN 5333	Surface Water Hydrology	3
CVEN 5334	Groundwater Hydrology	3
CVEN 5335	Vadose Zone Hydrology	3
CVEN 5401	Introduction to Environmental Engineering	3
ENVS 5305	Water Quality and Resources	3

ENVS 5380	Anthropocene Futures	3
GEOG 5240	Applied Geomorphology	3
GEOG 5251	Fluvial Geomorphology	3
GEOG 5270	Glacial Geomorphology	3

Thesis Option

Code	Title	Hours
<i>Take the following</i>		6
GEOG 6750	Research Design	3
GEOG 6950	Master's Thesis	1-6

Non-Thesis Option

Code	Title	Hours
<i>Take an additional course from the lists above and the following</i>		6
ENVS 6800	Community-Based Research Practicum	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/ges/programs/master-science/ms-learning-goals-objectives/>).

Environmental Science Education Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Certificate Advisor: Bryan Wee
E-mail: bryan.wee@ucdenver.edu

Introduction

Please click here (p. 287) to see Geography and Environmental Sciences Department information.

Certificate Objectives

1. Students will synthesize environmental science content with relevant educational practices
2. Students will recognize, understand and apply environmental science education in either formal or informal educational settings
3. Students will utilize education research methods to support disciplinary learning
4. Students will identify a broader set of career options (see list below)

Sample List of Career Options

- K-12 Teacher or curricular specialist
- UNICEF/UNESCO/World Heritage Foundation
- National Parks Service or U.S. Forest Service
- Non-profit organizations (e.g. Colorado Alliance for Environmental Education)
- Regulatory Agencies (e.g. U.S. Environmental Protection Agency)
- Environmental and/or Educational Consultancy Firms
- Adjunct lecturer or instructor

Program Delivery

This is both an on-campus and field-based program.

Declaring This Certificate

Please see the Certificate advisor.

Eligibility

Environmental Science Education has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

Current CU Denver Students

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

Former CU Denver Students or Graduates of Other Universities

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

Admissions: <https://www.ucdenver.edu/admissions/non-degree-admissions> (<https://www.ucdenver.edu/admissions/non-degree-admissions/>).

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

Program Expectations

Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the Environmental Science Education Certificate may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the Certificate advisor. Please pay close attention to prerequisites for specific courses.

Performance Expectations

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

General Requirements

Click here (p. 59) for information about Academic Policies.

Program Requirements

1. Students must complete a minimum of 12 credit hours.
2. Students must complete a minimum of 12 graduate (5000-level or higher) credit hours.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Take the following</i>		6
ENVS 5650	Environmental Education	3
GEOG 5150	Place, Landscape, and Meaning	3

Electives

Code	Title	Hours
<i>Take six credit hours from the following list of electives. Students should consult with the certificate advisor about other courses that may count toward this requirement.</i>		6
ENVS 5340	Equity & Culture in Science Education: Local/Global	3
GEOG 5300	Children's Geographies	3
GEOG 5440	Science, Policy and the Environment	3
GEOG 5995	Global Study Topics	3-9

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/ges/programs/certificates/environmental-science-education-certificate/>).

Free and Open Source Software for Geospatial Applications Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here to see Geography and Environmental Sciences department information.

Certificate Advisor: Rafael Moreno
E-mail: rafael.moreno@ucdenver.edu

Certificate Objectives

1. Provide students and working geospatial professionals with the knowledge and skills for the effective use and development of FOSS4G solutions in diverse application contexts. This complements and enhances the knowledge and skills they have in the use of geospatial proprietary software solutions.
2. Students will be exposed to several FOSS4G alternatives to address the needs of a geospatial information infrastructure from desktop, database management systems, systems automation/customization, all the way to Web/Cloud-based applications and enterprise level solutions.

- Students will acquire the necessary knowledge and skills to effectively use the most advanced FOSS4G alternatives to develop solutions for each of levels of a geospatial information infrastructure previously mentioned.
- Students will have the knowledge and hands-on skills that will enable them to design and develop hybrid geospatial information infrastructures that make use of proprietary software and FOSS4G incorporating each them in a combination that maximizes efficiency of the end infrastructure.

Current CU Denver Students

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

Former CU Denver Students or Graduates of Other Universities

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

Admissions: <https://www.ucdenver.edu/admissions/non-degree-admissions> (<https://www.ucdenver.edu/admissions/non-degree-admissions/>).

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

Performance Expectations

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

- Students must complete a minimum of 12 credit hours.
- Students must complete a minimum of 12 graduate (5000-level or higher) credit hours.
- Students must earn a minimum grade of B (3.0) or better in all core courses, a B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
- Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

- The students will have the option to take other courses above and beyond the core requirements for the certificate.

Required Courses

Code	Title	Hours
<i>Take the following</i>		12
CVEN 5385	GIS Relational Database Systems	3
Students learn the principles and techniques to design a spatial database and perform multiple analyses and functions in a FOSS4G spatial database management system.		
GEOG 5086	FOSS4G Systems Integration	3
This course functions as the capstone for the certificate. It concentrates on applying all the knowledge and skills previously obtained and adding more in the area of integration of geospatial information infrastructures based on FOSS4G. Students work on integrating systems from desktop to Web/Cloud-based applications.		
GEOG 5091	Open Source Software for Geospatial Applications	3
This course exposes students to the diversity of FOSS4G solutions that exist for each of the elements of geospatial information infrastructure. They acquire the necessary hands-on skills to effectively use one FOSS4G to address the needs of each of the levels of a geospatial information infrastructure.		
GEOG 5092	GIS Programming and Automation	3
Students learn programming principles and techniques to automate processes and customize a geographic information system (GIS), and to integrate and coordinate the functions of diverse geospatial software (e.g. a database management system with a GIS).		

Optional Courses

Students can choose to take one or more of the following courses that can complement their formation in specific topics. However, these course are not required as part of the certificate program.

Code	Title	Hours
BIOL 3763	Biostatistics	4
BIOL 6764	Biological Data Analysis	4
Both of these courses use the open source software R for environmental data analysis including spatial statistics and geostatistics.		
CVEN 5389	Open Source Desktop Mapping, Modeling & Data Processing	3
This course uses different FOSS4G for the creation of Web-based mapping solutions.		
GEOG 5050	Applied Spatial Statistics	3
This course is offered annually as part of the GES offerings. It also uses R for data analysis including spatial statistics and geostatistics.		
GEOG 5095	Deploying GIS Functionality on the Web	3
This course uses FOSS4G for database analysis and creation of Web-based GIS systems.		

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/ges/programs/certificates/free-and-open-source-software-geospatial-applications-foss4g/>).

Geographic Information Science Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here to see Geography and Environmental Sciences department information.

GISci Certificate Advisor: Matt Cross

E-mail: matthew.cross@ucdenver.edu

The Geographic Information Science (GISci) Certificate in the Department of Geography and Environmental Sciences is designed to provide CU Denver undergraduates and graduates, as well as non-degree seeking students interested in professional development, with proficiency in the application of spatial thinking, geographic information science, and geo-technologies in the social and physical sciences, spanning the natural, built and human environments and emphasizing human-environment interconnections. The GISci Certificate core establishes a broad foundation in spatial technologies and methodologies, including geographic information systems, remote sensing, cartography, spatial extensions to database management systems, and statistics. From this base, students can delve into various specialization areas depending on their interests.

Upon successful completion of the certificate, students will be able to:

- articulate and apply basic theoretical underpinnings of spatial analytical principles, methodologies, and techniques;
- effectively utilize at least three different types of software used for spatial analysis;
- apply geo-spatial thinking, geographic information science, and geo-technologies appropriately; and
- analyze diverse real-world problems that have a spatial dimension and develop alternative solutions to them.

Eligibility

Geographic information science and geo-technologies have broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

You must complete the Application for GISci Certificate, which can be obtained from the GISci Certificate Coordinator. The application requires copies of former transcripts indicating that an undergraduate degree has been previously granted or an unofficial transcript from CU Denver showing that you are a current undergraduate or graduate student. This application is required to be formally registered in the GISci Certificate program, and must be completed no later than the semester prior to the scheduled completion of the certificate.

Current CU Denver Students

A student may begin the program in any semester or during the summer by making arrangements with the GISci Certificate Coordinator. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

Former CU Denver Students or Graduates of Other Universities

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

Admissions: <https://www.ucdenver.edu/admissions/non-degree-admissions> (<https://www.ucdenver.edu/admissions/non-degree-admissions/>).

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

Program Expectations

To earn the certificate, students must complete a specific set of geospatial classes. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver. Only in rare circumstances will exceptions be made regarding this policy. Courses taken within the GISci Certificate Program may be used towards one other degree requirement. Any changes to the standard curriculum program must be approved in writing by the GISci Certificate Coordinator. Please pay close attention to prerequisites for specific courses.

Performance Expectations

Students must earn a 3.0 GPA average with no course below a "B-" in all approved courses for the certificate. For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete a minimum of 18 credit hours.
2. Students must complete a minimum of 18 graduate (5000-level) or higher credit hours.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. It is assumed that graduate students have some prior knowledge in basic mapping skills, therefore GEOG 2080 Introduction to Mapping and Map Analysis is not required. All core classes are required for completion of the GIS Certificate and are offered at least on a yearly basis. The statistics course requirement can be filled by enrolling in the GEOG 5050 Applied Spatial Statistics or one of several graduate

level (5000 or above) classes offered by CU Denver and approved by the certificate coordinator.

2. If you are currently a graduate student at CU Denver and also attended CU Denver as an undergraduate, you may apply only one 3 credit hour undergraduate course (4000 level) to the GISci Certificate.
3. There is a prerequisite requirement of a basic statistics class taken at the undergraduate college level prior to taking any graduate level statistics class at CU Denver. Any additional two electives can be taken from the elective list.

Required Core Courses

Code	Title	Hours
<i>Take the following</i>		12
GEOG 5050	Applied Spatial Statistics	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5080	Introduction to GIS	3
GEOG 5081	Cartography and Computer Mapping	3
Or an equivalent course approved by the GISci Certificate Coordinator		

Electives

Code	Title	Hours
<i>Take two of the following:</i> ¹		6
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	3
GEOG 5085	GIS Applications for the Urban Environment	3
GEOG 5086	FOSS4G Systems Integration	3
GEOG 5090	Environmental Modeling with Geographic Information Systems	3
GEOG 5091	Open Source Software for Geospatial Applications	3
GEOG 5092	GIS Programming and Automation	3
GEOG 5095	Deploying GIS Functionality on the Web	3
GEOG 5235	GIS Applications in the Health Sciences	3
CVEN 5382	Geospatial Data Development	3
CVEN 5385	GIS Relational Database Systems	3

¹ One of these courses may be substituted with an elective approved by the GISci Certificate Coordinator

To learn more about the Student Learning Outcomes for this program, please visit our website (https://clas.ucdenver.edu/ges/programs/certificates/gis-certificate/#learning_outcomes-280).

Sustainable Urban Agriculture Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here to see Geography and Environmental Sciences department information.

Certificate Advisor: Amanda Weaver
E-mail: amanda.weaver@ucdenver.edu

Introduction

Please click here (p. 287) to see Geography and Environmental Sciences Department information.

The goal of the certificate program is to provide GES students advanced training in sustainable urban agriculture through the integration of university classroom study and field-based practicum conducted at the department's field research station. Requirements for the certificate are therefore divided between on-campus courses and field courses.

Upon successful completion of the certificate, students will:

- Have knowledge of the history of urban farming
- Understand the modern agro-food system
- Participate in sustainable urban agricultural practices

Program Delivery

This is both an on-campus and field-based program.

Declaring This Certificate

- Please see the Certificate advisor.

Eligibility

Sustainable Urban Agriculture has broad applications across many disciplines. Students who already hold a bachelor's degree from CU Denver or other institutions in any major may be admitted as a CU Denver graduate student or a non-degree-seeking student, depending on enrollment status.

Current CU Denver Students

A student may begin the program in any semester or during the summer by making arrangements with the Certificate advisor. This should be done as soon as you have decided to pursue the certificate, and no later than the semester previous to completion of all the courses required to obtain the certificate.

Former CU Denver Students or Graduates of Other Universities

In order to start the certificate program, you will need to apply to the university as a non-degree seeking student if you are not already enrolled in a graduate program within CU Denver. Once accepted, you will be able to enroll in all of the appropriate classes.

Admissions: <https://www.ucdenver.edu/admissions/non-degree-admissions> (<https://www.ucdenver.edu/admissions/non-degree-admissions/>).

Specific questions about enrollment or tuition should be addressed directly to the University Registrar's Office or Bursar's Office.

Performance Expectations

For graduate and non-degree seeking students, the certificate will be awarded upon completion of the program and be added to the student's transcript.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges

students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

General Requirements

- Click here (p. 59) for information about Academic Policies.

Certificate Requirements

1. Students must complete a minimum of 12 hours taken from the approved courses below.
2. Students must complete all courses at the graduate level (5000 or above) to fulfill the requirements of the certificate.
3. Students must earn a minimum grade of B- (2.7) in all certificate courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA. Students cannot complete certificate or ancillary course requirements as pass/fail.
4. All 12 credit hours for the certificate must be earned at the University of Colorado Denver.

Program Restrictions, Allowances and Recommendations

1. Because a certificate is a CU Denver certification of a students' specialized knowledge in an advanced subject matter, all courses in a certificate program are expected to be taken in residency at CU Denver.
2. Any changes to the standard curriculum program must be approved in writing by the certificate advisor.
3. Courses taken within the Sustainable Urban Agriculture Certificate Program may be used towards one other degree requirement.
4. Please pay close attention to prerequisites for specific courses.

Required Courses

Code	Title	Hours
<i>Take the following</i>		9
ENVS 5450	Urban Food and Agriculture: Perspectives and Research	3
ENVS 5460	Sustainable Urban Agriculture Field Study I	3
ENVS 5470	Sustainable Urban Agriculture Field Study II	3

Elective

Code	Title	Hours
<i>Take one of the following</i>		3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5085	GIS Applications for the Urban Environment	3
GEOG 5335	Contemporary Environmental Issues	3
GEOG 5640	Urban Geography: Denver and the U.S.	3
GEOG 5680	Urban Sustainability: Perspectives and Practice	3
GEOG 5939	Internship ¹	3

¹ a sustainable agriculture internship with a local food/urban agriculture community organization

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/ges/programs/certificates/sustainable-urban-agriculture-certificate/>).

Health and Behavioral Sciences

Director: Patrick Krueger

Program Assistant: Anne Marie Summers

Office Location: North Classroom 3018

Telephone: 303-315-7157

Fax: 303-315-7155

E-mail: patrick.krueger@ucdenver.edu

Website: clas.ucdenver.edu/hbsc/ (<http://clas.ucdenver.edu/hbsc/>)

Mailing Address:

Program in Health and Behavioral Sciences

Campus Box 188

P.O. Box 173364

Denver, CO 80217-3364

Overview

The mission of the health and behavioral sciences (HBSC) program is to apply social science theory and innovative research methods to critically address emerging issues in health. The program trains students to confront issues affecting the health of communities and populations by focusing on social determinants of health and diseases. These determinants can be more influential on population health than the health care system.

The program's overarching framework integrates social, cultural and biomedical perspectives to understand the underpinnings of health and the conditions essential for its creation and maintenance. Students and faculty conduct interdisciplinary research on topics including emerging diseases, maternal/child health, substance abuse, health disparities and global health. Graduates are innovative researchers, effective educators and leaders directly engaged in the practice of population health.

Population health is working to protect the environment, identifying sources of illness in population groups, controlling disease outbreaks, evaluating the economic impacts of changing demographics, developing interventions to promote healthy behavior, and producing health policy legislation. Population health draws from a broad array of disciplines, such as the social and behavioral sciences, sociology, anthropology, psychology, medicine, economics, statistics, epidemiology, law and biology, and each provides unique insights for the diverse set of activities involved in population health practice.

PhD Program in Health and Behavioral Sciences

The doctor of philosophy degree in health and behavioral sciences is rooted in the realization that our ability as a global society to overcome some of the most significant and intractable public health problems today rests on the willingness of biomedical and social science researchers to innovate across traditional disciplinary boundaries. Students are trained in theory from multiple disciplines and in both quantitative and qualitative research methods.

A master's degree is not provided by the health and behavioral sciences department.

A student's particular research focus constitutes a key part of his or her doctoral program. A range of possible foci exists, given the particular student's interest and faculty expertise.

Examples of HBSC research foci include:

- *Social determinants of health.* Such research interests include studies on the health-related influences of socioeconomic position, social and economic inequality, discrimination, social networks and support, social capital, work conditions and psychological states including stress.
- *Community health.* This area of research involves community health assessment; program design and evaluation; translation of evidence-based interventions to diverse populations and communities; participatory research and community mobilization; policy analysis and advocacy for health-related problems.
- *Biosocial ecology.* Within this area are studies of the interplay of biological (including physiological, genetic or others of the biomedical health sciences), social, cultural and environmental characteristics influencing maternal/infant health, exercise performance or susceptibility to disease.
- *Global health* topics include social, cultural and biomedical factors influencing transmission of disease and health disparities on an international (as well as national) scale.

Recent student research exemplifying such foci includes:

- perinatal stressors and fetal and child health in New Zealand
- gender differences in access to effective HIV care in sub-Saharan Africa
- the factors that shape whether minority owned businesses offer employee sponsored health insurance
- decision making around healthy food choices among school-aged children
- community representation in health organizations in Colorado
- race/ethnic and socioeconomic disparities in exercise, sleep, and nutrition behaviors among U.S. adults

Graduates of the HBSC program acquire skills that situate them for academic careers and leadership roles in population health. Depending upon a student's concentration, the successful graduate will gain expertise in research design and methods; social, cultural and biobehavioral determinants of health and disease; the structure and organization of health care systems; the contribution of individual, social and cultural factors for deciding health behaviors; and how guided change in health care systems may enhance quality, efficacy and access. The significance of these skills in addressing current complex health issues ensures that graduates will be in demand in a number of employment sectors ranging from community and public health organizations, to academic institutions, to nonprofit research organizations and to private health care settings.

Requirements for Admission

A master's or equivalent graduate degree, or substantial research experience, is recommended for admission to the PhD program. Students applying without prerequisites may be admitted, but will be required to complete appropriate courses before being permitted to complete the core curriculum.

In addition to the general admission requirements of the Graduate School, the specific admission requirements for the PhD in health and behavioral sciences are as follows:

1. Knowledge from prior course work or vocational experience in *Epidemiology* (3 semester hours or the equivalent work experience). The applicant should have an understanding of the basic concepts and methods of epidemiology, including measures of risk, mortality, the distribution of disease, the role of bias and confounders, and study design.
2. Demonstrated academic excellence as evidenced by strong undergraduate and graduate GPAs. Admission to the program is highly competitive.

The applicability of a student's prior course work will be decided by the program executive committee after reviewing the student's transcript and additional materials. If the student does not have the requisite educational background or GPA, the student may be admitted on a conditional or provisional basis and additional course work required in accordance with Graduate School Policies and Procedures.

Prospective students should not be dissuaded from applying to the program if they do not meet all of the requirements for admission. In some cases, employment experience may be counted toward meeting a requirement. In other cases, students may be admitted conditionally upon their completion of a list of prerequisite courses that will be established at the time of admission. Students should be sure to address this issue in completing the graduate application by specifying the academic and vocational experience they possess that meets, in part or full, the admission requirements described above.

Master's Level Preparation for the Doctoral Program in Health and Behavioral Sciences

The program does not currently offer master's-level training in HBSC.

To Apply For Admission

At the Denver campus, all graduate applications are now submitted electronically. To begin the application process, go to the online admissions website. If you have any difficulties, call the administrative assistant at 303-315-7157. The program admits students only for the fall semester, which typically begins in mid- to late August. The deadline for the receipt of all application materials is **January 1** for admission the following August.

Applicants should invest considerable thought and effort in preparing their application. For instance, in the essay, applicants should provide information on:

1. their research interests and plans for graduate study;
2. how they see their research interests fitting into our program;
3. academic or professional research experiences including publications, theses, and research in progress;
4. academic and professional experiences in their proposed or related fields, including non-course education, teaching or other relevant employment, or other scholarly activities.

Applicants should also submit a brief writing sample that showcases their current skills in writing and analytical thinking. It is more important that the writing sample reflect their best work than that the topic match their planned area of study in our PhD program. Examples could include

a class paper, a selection from a thesis, a lead or sole authored paper, an op-ed style essay, a policy brief, or other sample.

Applicants should provide a current resume or CV to support their application.

In addition to the required recommendation form, letters of recommendation are required from at least three individuals in a position to judge the applicant's ability to complete the program. Recommenders may be employers, colleagues or professors; however, the applicant should be sure that the letters address the quality of, and aptitude for academic work as well as personal characteristics and qualities.

The program does not require GRE scores, but applicants may submit their scores if they believe it will strengthen their application.

Financial Aid

There are five kinds of financial aid available: graduate student stipends/fellowships; tuition assistance; teaching assistantships; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office.

Newly admitted, out-of-state, and students demonstrating outstanding scholastic achievement receive priority when assigning departmental sources of funding. Students interested in research assistantships should contact the individual faculty member with whom they wish to work regarding potential assistantship positions.

All other aid should be requested through the CU Denver Financial Aid Office (<https://www.ucdenver.edu/student-finances/financial-aid/>)

Advisors

Upon admission to the program, each student will be assigned a first-year advisor. The student or the faculty will then choose the faculty advisor who will guide the student through the core and elective course work. This faculty advisor may or may not be the student's dissertation advisor. The student selects his or her dissertation advisor and a minimum of three additional committee members who oversee the student's comprehensive examination and dissertation research.

Programs

- Health and Behavioral Sciences, PhD (p. 315)

Faculty

Professors:

Karen Spencer, PhD, Indiana University

David P. Tracer, PhD, University of Michigan

Associate Professors:

jimi adams, PhD Ohio State University

Patrick Krueger, PhD, University of Colorado

Meng Li, PhD, Rutgers University

Ronica Rooks, PhD, University of Maryland College Park

Sara Yeatman, PhD, University of Texas Austin

Assistant Professors:

Jennifer Boylan, PhD, University of Wisconsin-Madison

Visiting Assistant Professors:

Jorge Ivan Ramirez, PhD, Michigan State University

Professors Emerita:

Debbi Main, PhD, University of Colorado

Research and Clinical Faculty:

Hyeyoung Oh Nelson, PhD, University of California Los Angeles

Jean Scandlyn, PhD, Columbia University

Health and Behavioral Science (HBSC) Courses

HBSC 5999 - Topics in the Health and Behavioral Sciences (1-3 Credits)
An in-depth study of selected social science perspectives/theories and their applications to population health. Topics will vary from semester to semester, with a particular emphasis on current, salient population health problems. Prereq: Graduate standing or permission of instructor. Cross-listed with PBHL 4999. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HBSC 6320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HBSC 7320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6500 - Women and War (3 Credits)

Appraise women's experiences and selected issues related to war-time service, including women's roles during war, gender-specific policies, military sexual trauma, reintegration, and effects of deployment on mental and physical health. Restriction: Restricted to Graduate and Graduate Non-Degree major. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6840 - Independent Study: HBSC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences (1 Credit)

Features presentations by core, affiliated and adjunct faculty; alumni; distinguished guest speakers; and students nearing completion of the dissertation. The goal is to expose students to cutting-edge applications of health-related social and biological science research and to introduce students to the research interests of core and affiliated HBS faculty, advanced students, and alumni who they might otherwise not have the opportunity to meet. Note: Required for ALL first and second year students but open to all graduate students and faculty. May be taken up to three times for credit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Repeatable. Max Hours: 3 Credits. Grading Basis: Letter Grade Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

HBSC 7011 - Theoretical Perspectives (3 Credits)

Covers the following subject areas: philosophy and epistemology of the social and behavioral sciences as they are applied in public health and health care contexts; historical perspectives of Western biomedicine and public health; crosscultural perspectives on health systems; class, ethnic, and gender correlates of health and sickness; critical perspectives on Western health and health care models; and the structure and organization of health care systems. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7031 - Human Ecology and Environmental Adaptation (3 Credits)

Focuses on the interplay of biology, environment, culture, and behavior in the causes and exacerbation of disease. The course includes the following topics: health in environmental and evolutionary contexts; models of causation in biomedicine and other medical systems; individual, community, and population manifestations of health and disease; and biocultural interaction in disease process. Specific case studies drawn from contemporary health problems are used to illustrate in detail the nature of these processes. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I (3 Credits)

This course has four principal aims: (1) to provide students a working knowledge of research methodology as applied to field research efforts; (2) to enable students to apply research methodologies to areas of particular interest in the health and behavioral sciences; (3) to expose students to data manipulation techniques common to social science quantitative research; and (4) to teach basic research proposal development techniques. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Spring.

HBSC 7051 - Qualitative Research Design and Methods (3 Credits)

Much of the data collected in the social sciences is interview- and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences (3 Credits)

This course introduces students to multivariate regression methods - a set of statistical models that relate an outcome variable to a set of predictor variables. The course emphasizes understanding and applying regression models to address social science research questions. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

HBSC 7071 - Social and Behavioral Perspectives in Population Health (3 Credits)

Population health is an interdisciplinary or multidisciplinary field that focuses on the social and behavioral determinants of health. This course helps students to navigate the assumptions and perspectives of the various disciplines that do population health research. To achieve this, the course draws on literatures from diverse disciplines on topics including the social, economic, environmental, behavioral, political, and cultural factors that shape health, disease, and healthcare access and utilization. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7111 - Applications of the Health and Behavioral Sciences (3 Credits)

The purpose of this course is to help students select and refine a dissertation research topic. Each student, through presentations and discussions of their work, will receive feedback from fellow students and the instructor, and will have an opportunity to improve written and oral presentation skills. Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher or permission of the instructor. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher.

Typically Offered: Spring.

HBSC 7120 - Human Reproductive Technologies and the Law (3 Credits)

Examines the legal, ethical, and social issues that have come about with advances in assisted reproductive technologies (ART). Illustrates how lawyers, judges, bioethicists, legislators, and policy makers have addressed these issues. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

HBSC 7121 - Dissertation Proposal and Research (6-8 Credits)

Restriction: Restricted to Graduate Level Students admitted into the Health and Behavioral Sciences program. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Additional Information: Report as Full Time.

HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II (3 Credits)

This course introduces students to advanced multivariate regression methods (e.g., generalized linear models, survival models, hierarchical models). This course emphasizes the application of advanced regression methods to test social and behavioral science theories related to health.

Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

HBSC 7210 - Human Health and Environmental Pollution (3 Credits)

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 6210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Prereq: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with GEOG 4235, GEOG 5235. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 4080 or GEOG 5080

HBSC 7310 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. A basic statistics class is strongly recommended for optimal success. Cross-listed with ENVS 6230. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HBSC 6320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7340 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with CVEN 5494, ENVS 6200. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7360 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Restriction: Restricted to Graduate and Graduate Non-Degree majors. One year of college chemistry and one year of college biology are strongly recommended for optimal success. Cross-listed with ENVS 6220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7400 - Topics in the Health and Behavioral Sciences (3 Credits)

A flexible seminar format for dealing with topics of special interest in the health and behavioral sciences. Topics to be considered vary from semester to semester. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 8990 - Doctoral Dissertation (1-10 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the Health and Behavioral Sciences program. Term offered: fall, spring, summer. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Additional Information: Report as Full Time.

Health and Behavioral Sciences, PhD

Graduate School Policies and Procedures (p. 59) apply to this program

Please click [here](#) (p. 311) to see Health and Behavioral Sciences department information.

Overview

The PhD in Health & Behavioral Sciences (HBS) prepares students to be leaders in the interdisciplinary field of population health. Our program draws on theories and methods from the social, behavioral, and health sciences, to understand health, health behaviors, and health care. A few recent research topics in our program include the AIDS epidemic, the social contexts of medical care, the diffusion of health behaviors through social networks, the ethics of health care, biases that shape decision making, the mechanisms that link social conditions to biological health, and the determinants of health disparities. Graduates from our program are leaders in analyzing the conditions that give rise to the inequitable distribution of health within and across populations.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

There are three dimensions to the required curriculum:

1. A core curriculum that focuses on problem-oriented, interdisciplinary approaches to theory and method
2. Elective course work intended to provide the student with a solid base from which to launch the dissertation research
3. Dissertation research and writing

The curriculum is subject to change. What appears below is intended to give students a general idea of the extent, shape and content of the curriculum. Students should check with the program office for up-to-date information on specific course requirements and scheduling.

1. Students must complete a minimum of 62 credit hours with a minimum of 32 credits of coursework, and 30 credit hours of dissertation.
2. Students must complete all credit hours at the graduate (5000-level or higher) level.
3. Students must earn a minimum grade of B- (2.7) in all minor courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all credit hours with CU Denver faculty.

The Core Required Curriculum

The core curriculum should be completed by students by the end of their second year of full-time study. It consists of the following series of courses which, together, constitute 26 semester hours:

Code	Title	Hours
<i>Take the following</i>		26
<i>I. Health and Behavioral Sciences Colloquium</i>		
Each fall, the HBSC program will organize a series of presentations by scholars working in the health and behavioral sciences. The presentations provide students with the most current science and theory in the field. Required of all first- and second-year students, who must take at least two times.		
HBSC 7001	Colloquium Series in the Health and Behavioral Sciences	2
<i>II. Theoretical Perspectives in the Health and Behavioral Sciences</i>		
This series is designed to give students a thorough background in how the principles of the social and behavioral sciences have been applied to health issues. Topics include: the interplay between structure and agency in creating and maintaining health; social epidemiology; critical theory and social determinants of health; issues affecting Western biomedicine and public health systems; diffusion of healthy behavioral change among populations; social construction of health and illness; health policy and bioethics; social networks; and stress.		
HBSC 7011	Theoretical Perspectives	3

HBSC 7071	Social and Behavioral Perspectives in Population Health	3

III. Human Ecology and Environmental Adaptation

This course will emphasize the biological/physiological dimensions of human health and disease.

HBSC 7031	Human Ecology and Environmental Adaptation	3

IV. Research Design and Methods in the Health and Behavioral Sciences

Three HBSC core research design and methods courses, plus one additional advanced methods course of student's choosing. This series covers the philosophy of science and the structure of scientific inquiry, procedures for hypothesis-testing, quantitative and qualitative methodological strategies commonly employed in the field, epidemiology and program evaluation.

HBSC 7041	Research Design and Methods in the Health and Behavioral Sciences I	3

HBSC 7051	Qualitative Research Design and Methods	3

HBSC 7061	Quantitative Methods in the Health and Behavioral Sciences	3

HBSC 7161	Quantitative Methods in Health&Behavioral Sciences II	3

V. Applications of the Health and Behavioral Sciences

This course offers students the opportunity to focus on individual research interests with guidance from faculty and input from peers.

HBSC 7111	Applications of the Health and Behavioral Sciences	3

Elective Courses

Code	Title	Hours
<i>Elective coursework constitutes 6 semester hours, which can be drawn from the large number of offerings in the health and behavioral sciences at CU Denver. Students will be expected to fulfill the necessary prerequisites for taking these courses, and final authority as to whether a student may enroll in the course will rest with the department in which the course is offered.</i>		6
HBSC 7120	Human Reproductive Technologies and the Law	3
HBSC 7121	Dissertation Proposal and Research	6-8
HBSC 7210	Human Health and Environmental Pollution	3
HBSC 7235	GIS Applications in the Health Sciences	3
HBSC 7310	Environmental Epidemiology	3
HBSC 7320	Human Genetics: Legal, Ethical and Social Issues	3
HBSC 7340	Risk Assessment	3
HBSC 7360	Toxicology	3
HBSC 7400	Topics in the Health and Behavioral Sciences	3

Doctoral Dissertation Research

Code	Title	Hours

The doctoral dissertation research topic is chosen by the student. The student is expected to define a research question in health and behavioral science, identify the research strategy to be used for answering the question, conduct the research required and document the project in the form of a doctoral dissertation. The student will be guided in this process by a doctoral dissertation advisor and the additional members who comprise the student's doctoral dissertation committee (see below). A minimum of 30 semester hours of dissertation work is required. Students must register for a minimum of 5 dissertation credits each semester of their dissertation work. Students may not take more than a year's leave of absence or fail to enroll for semester hours more than three semesters before they are dropped from the program.

Formal Review

A formal review of each student's progress will be undertaken at the end of each year of study. Students who are deemed not to be making satisfactory progress will be informed in writing as to the nature and final result of the review before the end of June.

The Dissertation Prospectus and the Comprehensive Examination

Before a student advances to candidacy, they must complete a dissertation prospectus and defend it successfully in the context of an oral comprehensive examination. The dissertation prospectus is a complete description of the question or hypothesis that the student wishes to research for the dissertation project, the research design and study techniques and an assessment of the proposed project's contribution to the field. It will include a comprehensive review of the relevant literature. If the student chooses to undertake research in a particular ethnic or cultural community, they must also demonstrate sufficient understanding of that setting including adequate knowledge of the language. This prospectus must be approved by the student's advisor prior to scheduling the comprehensive examination.

The comprehensive examination will be an oral format based in part on, but not restricted to, the material presented in the dissertation prospectus. This exam must take place before the student's advancement to candidacy and will typically occur by the end of the third year of study. A committee comprising the advisor and a minimum of three faculty members will supervise the completion of the dissertation prospectus. This committee will conduct the oral examination and will recommend to the faculty by a majority vote whether or not the student should be advanced to candidacy.

The Doctoral Dissertation and Final Exam

After advancement to candidacy, the student in consultation with his or her advisor will appoint a dissertation committee comprising the chair and a minimum of three faculty members. The dissertation advisor and composition of the committee will be subject to approval by the faculty. The dissertation advisor will be responsible for overseeing the research and writing of the doctoral dissertation. The committee will review drafts of the dissertation and, when the dissertation is completed to its satisfaction, will conduct the final exam, which will be based on the doctoral dissertation and related materials. The final examination will be open to the public.

To learn more about the Student Learning Outcomes for this program, please visit our website. (<https://clas.ucdenver.edu/hbsc/degree-programs/phd-program/>)

History

Chair: Christopher L. Agee

Program Assistant: Tabitha Fitzpatrick

Graduate Advisor: Ryan Crewe

Office: Student Commons Building; 1201 Larimer Street, Room 3102, Denver, CO 80204

Telephone: 303-315-1776

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Website: clas.ucdenver.edu/history/ (<http://clas.ucdenver.edu/history/>)

Overview

The special responsibility of historical studies is understanding the past. History courses integrate many branches of knowledge, cutting across the lines of the social sciences and the humanities, and even the natural sciences. Identifying forces of stability and processes of change, history students develop their research, writing and analytical skills, which serve them well beyond their university years.

Graduate students in history develop skills in critical thinking, writing and independent research. Our program prepares students for a wide variety of professions, including teaching, government service, museum and archive management, and historic preservation, as well as further degree work in history, law, librarianship and business. The department expects that students graduating with an MA in history will master the following general skills for their degrees:

- The ability to pursue independent historical research projects
- The ability to analyze historiographical arguments
- The ability to analyze primary documents and develop arguments from them
- The ability to create bibliographies using archival, library, and Internet resources
- The ability to write in a variety of formats, including historiographical essays, book reviews, and research papers

Students will also master knowledge of the basic historical content of both their major and minor fields, and an understanding of the historiographies and historical methods in their major and minor fields.

Admission Requirements

- In addition to the general admission requirements of the Graduate School, the Department of History requires an undergraduate GPA of at least 3.25.
- Applicants are required to submit a sample of written work, usually a term paper or project of similar length.
- All applications must include three letters of recommendation, preferably from college or university faculty.
- Applicants should address any gaps, weaknesses, or special circumstances in their academic records in the statement of purpose portion of the application. In special circumstances, the department may modify its admission standards.

Application Deadlines

Semester	Date
Fall admission	March 15
Spring admission	October 15

Admission decisions are made by a graduate committee composed of the graduate advisor and faculty representing fields in U.S., European, global, and public history.

Programs

- History, MA (p. 323)
- Public History, MA in History (p. 328)
- Global History Graduate Certificate (p. 330)
- U.S. History Graduate Certificate (p. 330)

Faculty

Professors:

Marjorie Levine-Clark, PhD, University of Iowa

Associate Professors:

Christopher Agee, PhD, University of California, Berkeley

Ryan Crewe, PhD, Yale University

Gabriel Finkelstein, PhD, Princeton University

Peter Kopp, PhD, University of Nevada, Reno

Kariann A. Yokota, PhD, Yale University

Assistant Professors:

Xiaofei Gao, PhD, University of California, Santa Cruz

Rachel Gross, PhD, University of Wisconsin, Madison

Dale Stahl, PhD, Columbia University

William E. Wagner, PhD, University of California, Berkeley

Instructors:

Brandon Mills, PhD, University of Illinois at Urbana-Champaign

Christine Sundberg, MA, University of Colorado Denver

Associate Professors Clinical Teaching Track:

Cameron Blevins, PhD, Stanford University

John G. Whitesides, PhD, University of California, Santa Barbara

Emeritus Professors:

Frederick S. Allen, PhD, Harvard University

Mary S. Conroy, PhD, Indiana University

Rebecca Hunt, PhD, University of Colorado Boulder

Pamela W. Laird, PhD, Boston University

Thomas J. Noel, PhD, University of Colorado Boulder

Carl E. Pletsch, PhD, University of Chicago

Myra L. Rich, PhD, Yale University

James B. Whiteside, PhD, University of Colorado

James B. Wolf, PhD, University of California, Los Angeles

History (HIST)

HIST 5027 - Enlightenment and Revolution (3 Credits)

In this course students explore the relationship of ideas and events in Europe during the 17th and 18th centuries. Modernizing trends in the European economy, religion, science, states and international affairs leading up to the French Revolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 4027. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5028 - Nations and Classes: 19th Century Europe (3 Credits)

Focuses on material and ideological changes in 19th century Europe, exploring social, cultural, political, economic, and intellectual developments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4028. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5029 - Age of Anxiety in Europe (3 Credits)

Looks at Europe at the end of the nineteenth century in an effort to determine if there is any relation between the peculiarities in culture at the time and the horrors in politics that followed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4029. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5030 - Europe During the World Wars (3 Credits)

Covers the history of the two world wars and their origins, political and social upheaval during the interwar economic crisis, the rise of communism, Italian fascism and Nazism, with an emphasis on cultural production and intellectual life. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5032 - Globalization in World History Since 1945 (3 Credits)

An interdisciplinary course on contemporary world history and globalization. While the course is historically structured, economic, political, and sociological matters are explored. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4032. Term offered: fall, spring, summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring, Summer.

HIST 5035 - Crisis and Transformation: Europe's 20th Century (3 Credits)

This course examines 20th century European history focusing on themes of crisis and transformation. We will explore how devastating wars, economic depression, stark ideological divisions, and revolutionary social, political and cultural movements dramatically changed Europe over the course of the century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4035. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5046 - Victorians and Victorianism (3 Credits)

Taking an interdisciplinary perspective, this course examines English people and English life during the reign of Queen Victoria, 1837-1901. What were the defining features of the Victorian age? What did it mean to be "Victorian?" When and why did the Victorian paradigm break down? Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4046. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5051 - Britain and The Empire (3 Credits)

Examines 19th and 20th century British history, addressing social, cultural, and political themes. Explores industrialization, state growth, and imperialism; relationships between race, gender, and class; and the ways in which colonizers and the colonized experienced empire.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4051. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5055 - The Atlantic Slave Trade: Africa, Caribbean and U.S. (3 Credits)

Presents a broad overview of the slave trade in the Atlantic World, including discussion of the slave plantation, the creation of Caribbean societies and the consequences of independence from Britain.

Restriction: Restricted to Graduate Level students. Cross-listed with HIST 4055. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5062 - Modern France: 1789 to the Present (3 Credits)

Considers the shaping of modern France from the 18th century Bourbon Monarchy and aristocratic society to today's liberal democracy, in which multiculturalism, globalization and supranational institutions call into question the very nature of French identity. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4062. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5071 - Modern Germany (3 Credits)

Surveys the major political, institutional, social, economic, and cultural developments that have occurred in Germany since the late 18th century. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4071. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5074 - Post-War Germany (3 Credits)

Historical survey of Germany since the second world war, with an emphasis on culture and society. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4074. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5075 - Travel Stories and Origins of Cultural Anthropology (3 Credits)

Examines the early history of cultural anthropology by means of classic travel literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4075. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5076 - History of Modern Science (3 Credits)

Surveys the history of science from the 18th century to the present. Treats all disciplines, from physics to physiology, in an attempt to understand how the natural world came to dominate our sense of ourselves. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4076. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5083 - Russia Since 1917 (3 Credits)

Studies the development of the Soviet Union from its formation in the October Revolution, through the Civil War, the new economic policy, industrialization, collectivism, the Stalinist purges, up to the present.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4083. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5133 - Management of Material Culture and Museum Collections (3 Credits)

This course provides in-depth knowledge of the rudiments of material culture documentation, preservation and management. While we have designed this class for those interested in working in history museums, this is also appropriate for those students who want to learn the place of artifacts in studying history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4133. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5201 - Core Themes in U.S. History (3 Credits)

This course surveys major themes in U.S. history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4201. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5209 - Race, Religion, and Belonging (3 Credits)

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources #such as sermons, reality TV shows, court cases and graphic images as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation#state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 4030, ETST 5030, RLST 4030, RLST 5030 and HIST 4209. Restriction: Graduate standing or instructor permission required to enroll. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5212 - Civil War and Reconstruction (3 Credits)

Begins with the causes and outbreak of the American Civil War, describes the military conflict and the social aspects of the war, and examines the federal efforts to reconstruct the southern states and protect the rights of Black citizens after 1865. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4212. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5217 - Consumer Culture (3 Credits)

This interdisciplinary course examines the dynamics of the consumer culture in the context of social, economic, and technological history. The analysis begins with 17th century European origins, and continue through recent world developments, emphasizing the U.S. since 1800. Note: Open to all students. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4217. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5227 - American West (3 Credits)

Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West from prehistoric times to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4227. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5229 - Colorado Historic Places (3 Credits)

Introduces community architecture, folklore, and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4229. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5232 - Historic Preservation (3 Credits)

Introduces the history, methodology, and goals of historic preservation. Guest speakers, field trips, research projects, and book reports. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4232. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5234 - History at Work: Public and Community History (3 Credits)

An overview of history outside the academic setting. Students have the opportunity to learn about jobs through on-site visits and presentations made by people engaged in a wide variety of occupations in history other than teaching. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4234. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5244 - Interpretation of History in Museums: Exhibits and Education (3 Credits)

This course allows students to gain in-depth knowledge of historical interpretation through exhibits and education in a museum setting. This class is designed for those preparing to work in history museums but is also appropriate for teachers and others who want to learn how museum programs interpret history with artifacts and other historical materials. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4244. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5260 - Introduction to Digital Studies (3 Credits)

Develop marketable skills such as building websites, making interactive maps, recording podcasts, and analyzing data while also studying the cultural and ethical dimensions of these technologies. Cross-listed with HIST 3260. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

HIST 5261 - Data: A User Manual (3 Credits)

Teaches the technical skills of data collection, processing, analysis, and visualization, along with the history and ethics of how societies, corporations, and governments have used and abused data over time. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 4261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5307 - History of Sexuality (3 Credits)

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4307 and WGST 4307/5307. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5308 - Crime, Policing, and Justice in American History (3 Credits)

Focuses on changing legal and cultural definitions of crime, the role of the police, the evolution of punishment in theory and practice, and the role of mass culture in shaping the social history of crime and justice. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4308. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5343 - Women & Gender in US History (3 Credits)

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with HIST 3343, WGST 3343, and WGST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5412 - Mexico and the United States: People and Politics on the Border (3 Credits)

Examines the convoluted relations between these two republics, focusing on diplomatic, cultural and social interactions. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4412. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5421 - Modern China (3 Credits)

Surveys Chinese history in the modern era. Includes examination of Western domination of China, revolution, and internal fragmentation of China; Japanese attacks and World War II; and civil war and the communist revolution. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4421. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5455 - African Struggle for Independence (3 Credits)

An assessment of African leadership from the colonial era to the present.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4455. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5461 - The Modern Middle East (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4461. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5462 - Islam in Modern History (3 Credits)

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4462, RLST 4462, RLST 5462. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5475 - The Vietnam War (3 Credits)

Covers the conflict in Vietnam, with roots in the period prior to World War II. Main topics include the rise of nationalism in French Indochina, the war against the French, the Northern moves to unify Vietnam, American intervention, and eventual victory of the Northern regime. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4475. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5490 - Weapons of Mass Destruction (3 Credits)

Weapons of mass destruction have affected politics, health, and environments around the globe. This course will examine the development, use, and consequences of these modern technologies of war and terror. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4490. Term offered: summer, fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Summer.

HIST 5494 - Red and Blue America: U.S. History, 1973-Present (3 Credits)

Surveys the major intersections of politics, culture, and society in American history since 1973. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed HIST 4494. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5616 - Global History of Energy (3 Credits)

Explores the history of human energy use on local, national, and international scales, examining its social, political, and economic effects, and its implications for the environment. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 3616. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5621 - Explorers and Exploration (3 Credits)

Examines the history of travel and exploration from the 13th century to the present. Readings draw primarily from first-person accounts to understand why people voyage, what they hope to discover, and what happens to them along the way. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4621. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5622 - Oceans In History (3 Credits)

Explores transoceanic exchanges, relations, and transformations in modern world history. Examines how historians analyze and conceptualize global interactions. Topics include voluntary and forced migrations, resistance and revolution, transoceanic economic relations, piracy, and environmental change. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4622. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5645 - Archival Management (3 Credits)

This course studies theory and principles pertaining to the management of current and non-current records, public and private archival materials, as well as the administration of archival manuscript depositories for housing records of historical value. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4645. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5810 - Special Topics (1-3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4810. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5840 - Independent Study: History (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

HIST 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6013 - Introduction to the Professional Study of History (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6840 - Independent Study: HIST (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 6931 - Readings: Special Subjects in History (3 Credits)

Readings in topics in history with varying subtitles reflecting course content. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Term offered: spring, summer, fall. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Typically Offered: Fall, Spring, Summer.

HIST 6940 - Comprehensive Exam (1 Credit)

Preparation for and completion of comprehensive examination for History MA. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 1 Credit.

Grading Basis: Letter Grade

HIST 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6951 - Masters Project: Advanced History Curriculum Development (1-6 Credits)

Students develop curricula for secondary-level history courses; must demonstrate thorough knowledge of subjects; understanding of historiographic and methodological problems; command of primary sources and their uses in teaching; and describe teaching strategies, methods, and assessments to be used in the curricula. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6952 - Master's Project: Public History (1-6 Credits)

Public history students may use one to six credits to complete a single public history project. Projects can entail creating an exhibit, organizing a museum or archival collection, conducting a preservation survey or similar activities. Students are required to prepare a paper describing the process and results of the project. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6989 - Seminar: Special Subjects in History (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Term offered: fall, spring. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6992 - Seminar: Colorado Studies (3 Credits)

This advanced interdisciplinary seminar on Colorado starts with a survey of the published literature. Students then select a research topic of their own and complete a publishable paper using primary sources.

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

History, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

The master of arts in history requires 36 semester hours (12 courses). Students applying for admission to the program should have some background in history, though not necessarily a BA in the subject. The department encourages applications from individuals of any age interested in continuing or resuming their education. Graduate students in history develop skills in critical thinking, writing and independent research. Our program prepares students for a wide variety of professions, including teaching, government service, museum and archive management, and historic preservation, as well as further degree work in history, law, librarianship and business. The department expects that students graduating with an MA in history will master the following general skills for their degrees:

- The ability to pursue independent historical research projects
- The ability to analyze historiographical arguments
- The ability to analyze primary documents and develop arguments from them
- The ability to create bibliographies using archival, library, and Internet resources
- The ability to write in a variety of formats, including historiographical essays, book reviews, and research papers

Students will also master knowledge of the basic historical content of both their major and minor fields, and an understanding of the historiographies and historical methods in their major and minor fields.

Graduate Advising

Early in their first semester, students should contact the history department graduate advisor to discuss their path through the program and to receive advice regarding the selection of major and minor fields.

Degree Tracking Responsibility

Although faculty will provide reasonable guidance, it is up to students to monitor their own progress through the program in consultation with the graduate advisor and their major and minor advisors; this includes knowledge and understanding of application and graduate deadlines, degree requirements, comprehensive exam expectations and processes, thesis guidelines, etc.

Major Fields, Minor Fields, and Concentrations

The MA in history seeks to provide students with a balance of breadth and depth in the study of history. Major fields are broad areas of study within which students gain a general picture of historical processes. Concentrations provide focus for developing expertise within the major,

either regionally or thematically. Minor fields provide a complementary or comparative area and must sit outside the major field.

Advisors and students together will work out Plans of Study, which indicate the courses students intend to take to meet their requirements, based on their selection of major and minor fields. *Students should make every effort to enroll in courses that best fit their major field, major concentration and minor field.*

The department has core readings for the Public History and US History fields. Students will draw on these readings for their comprehensive exams. Students working in all fields will coordinate their readings with their major and minor advisors.

Major Field Concentrations

Students work with advisors to select one of the major field concentrations listed below. Concentrations provide thematic or regional focus to a broad geographical or methodological major (e.g. for the global history major, students could concentrate on trade, borders, imperialism, etc.. or any of the areas of regional expertise of our faculty). Readings for the major field concentration are in addition to the core reading list. Note that students may select their concentrations and the options for minors from the same lists.

Minor Fields

Students can define their minor field as a specialization within one of the four major fields or as topics from the list of concentrations. Note that students may select their concentrations and the options for minors from the same lists.

Choosing Advisors and Fields of Study

All history MA candidates choose a major field and a minor field. Students will take courses in these fields and will be tested in these fields. After consulting with the graduate advisor, students are responsible for securing two field advisors, one to oversee their progress in the major field, the other to oversee their minor field. All students should have chosen their fields and advisors by the end of the semester in which they have complete 12 credit hours. Students will also need a third advisor for the comprehensive examinations. This third advisor is typically in their major field and students should always consult with them during preparation for the examinations.

Program Requirements

1. Students must complete a minimum of 36 credits from approved courses.
2. Students must complete a minimum of 18 credits at the 6000 level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. All credits for the degree must be completed with CU Denver faculty. A maximum of 12 credits of relevant graduate work may be transferred from another university with the program director's approval.

Program Restrictions, Allowances and Recommendations

1. With approval from the graduate advisor and the appropriate faculty, students may transfer up to nine graduate-level credits accrued

- before enrollment in the CU Denver MA history degree program, provided that they earned a grade of *B+* or better in these courses. Students must submit a syllabus for each course they wish to transfer, and faculty may require students to complete additional assignments to meet the expectations of the department. The department will not accept transfer of courses comparable to HIST 6013, Introduction to the Professional Study of History.
- 2. All history MA students must have a major field and a minor field, and they must complete half of their course work at the 6000 level.
 - 3. Students may not select their major and minor fields from the same group.

Requirements

Code	Title	Hours
Take the following		3
HIST 6013	Introduction to the Professional Study of History	3

Code	Title	Hours
Major Field		18

Core Course in Major Field (3-6 semester hours)

Public history and U.S. history major fields require core courses covering major approaches and themes. The core courses familiarize students with the field in a broad sense.

Research Seminars (3-6 semester hours)

Research seminars focus on students’ development of an original, primary research paper. One 3-semester-hour research seminar is required of all students. A second research seminar is required for students not in public history; the second 3 semester hours can be taken within the major or minor field.

Major Electives (9-12 semester hours)

Major electives are made up of courses in the major and concentration, including readings courses, that address specific field historiographies, and optional extended research credits. Students who choose to do a thesis may apply 6 thesis semester hours (HIST 6950) toward the major electives requirement.

Code	Title	Hours
Minor Field		12

Minor electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

Code	Title	Hours
Open Elective		3

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

Code	Title	Hours
Comprehensive Examinations		

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and generally before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students’ knowledge of their course work and their reading lists for their major, minor and concentration. The exam consists of a take-home written section, with broad essay questions in both the major and minor fields; this is followed by an oral exam with the student’s faculty committee. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty. Students should expect to read 80-100 books combined, as well as significant articles, in their major and minor fields.

HIST 6940	Comprehensive Exam ¹	1

¹ When appropriate, students may enroll in HIST 6940 Comprehensive Exam connected to faculty commitment to preparing students for their examination.

MA Major Fields, Minor Fields and Concentrations

Students must select their major and minor fields from any two of the following three groups. (Students may not select their major and minor fields from the same group).

Group 1: Geographical Concentrations

East Asia

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5421	Modern China	3

Latin America

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3

Middle East

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5461	The Modern Middle East	3
HIST 5462	Islam in Modern History	3

Europe

Code	Title	Hours
HIST 5027	Enlightenment and Revolution	3
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3

HIST 5030	Europe During the World Wars	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5046	Victorians and Victorianism	3
HIST 5051	Britain and The Empire	3
HIST 5062	Modern France: 1789 to the Present	3
HIST 5071	Modern Germany	3
HIST 5074	Post-War Germany	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5083	Russia Since 1917	3

United States

Code	Title	Hours
HIST 5201	Core Themes in U.S. History	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5343	Women & Gender in US History	3

- Colonial and Early Republic

- Nineteenth Century

Code	Title	Hours
HIST 5212	Civil War and Reconstruction	3

- U.S. West

Code	Title	Hours
HIST 5227	American West	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3

- Twentieth Century

Code	Title	Hours
HIST 5217	Consumer Culture	3
HIST 5475	The Vietnam War	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

- U.S. Foreign Policy

Code	Title	Hours
HIST 5475	The Vietnam War	3

- Colorado

Code	Title	Hours
HIST 5229	Colorado Historic Places	3

Global

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5055	The Atlantic Slave Trade: Africa, Caribbean and U.S.	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5076	History of Modern Science	3
HIST 5455	African Struggle for Independence	3
HIST 5490	Weapons of Mass Destruction	3

HIST 5621	Explorers and Exploration	3
HIST 5622	Oceans In History	3

Group 2: Thematic Concentrations Colonialism and Imperialism

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5046	Victorians and Victorianism	3
HIST 5051	Britain and The Empire	3
HIST 5055	The Atlantic Slave Trade: Africa, Caribbean and U.S.	3
HIST 5062	Modern France: 1789 to the Present	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5083	Russia Since 1917	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3
HIST 5462	Islam in Modern History	3
HIST 5475	The Vietnam War	3
HIST 5621	Explorers and Exploration	3
HIST 5622	Oceans In History	3

Cultural History

Code	Title	Hours
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5046	Victorians and Victorianism	3
HIST 5062	Modern France: 1789 to the Present	3
HIST 5074	Post-War Germany	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5209	Race, Religion, and Belonging	3
HIST 5217	Consumer Culture	3
HIST 5227	American West	3
HIST 5461	The Modern Middle East	3
HIST 5462	Islam in Modern History	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

Social History

Code	Title	Hours
HIST 5027	Enlightenment and Revolution	3
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5030	Europe During the World Wars	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5046	Victorians and Victorianism	3
HIST 5074	Post-War Germany	3
HIST 5083	Russia Since 1917	3
HIST 5201	Core Themes in U.S. History	3
HIST 5209	Race, Religion, and Belonging	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5343	Women & Gender in US History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3

HIST 5421	Modern China	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3
HIST 5462	Islam in Modern History	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3
HIST 5622	Oceans In History	3

Foreign Policy

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5083	Russia Since 1917	3
HIST 5201	Core Themes in U.S. History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5421	Modern China	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3
HIST 5475	The Vietnam War	3
HIST 5490	Weapons of Mass Destruction	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

Economic and Business History

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5074	Post-War Germany	3
HIST 5083	Russia Since 1917	3
HIST 5201	Core Themes in U.S. History	3
HIST 5217	Consumer Culture	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5461	The Modern Middle East	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

Environmental History

Code	Title	Hours
HIST 5227	American West	3
HIST 5461	The Modern Middle East	3

Gender and Sexuality

Code	Title	Hours
HIST 5201	Core Themes in U.S. History	3
HIST 5307	History of Sexuality	3
HIST 5343	Women & Gender in US History	3

Citizenship and National Identity

Code	Title	Hours
HIST 5027	Enlightenment and Revolution	3
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5030	Europe During the World Wars	3
HIST 5032	Globalization in World History Since 1945	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5051	Britain and The Empire	3

HIST 5062	Modern France: 1789 to the Present	3
HIST 5071	Modern Germany	3
HIST 5074	Post-War Germany	3
HIST 5083	Russia Since 1917	3
HIST 5201	Core Themes in U.S. History	3
HIST 5209	Race, Religion, and Belonging	3
HIST 5212	Civil War and Reconstruction	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5421	Modern China	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3

War, Revolution and Genocide

Code	Title	Hours
HIST 5027	Enlightenment and Revolution	3
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5030	Europe During the World Wars	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5051	Britain and The Empire	3
HIST 5062	Modern France: 1789 to the Present	3
HIST 5071	Modern Germany	3
HIST 5074	Post-War Germany	3
HIST 5083	Russia Since 1917	3
HIST 5201	Core Themes in U.S. History	3
HIST 5212	Civil War and Reconstruction	3
HIST 5421	Modern China	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3
HIST 5475	The Vietnam War	3
HIST 5490	Weapons of Mass Destruction	3

Globalization

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5055	The Atlantic Slave Trade: Africa, Caribbean and U.S.	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5622	Oceans In History	3

Urban History

Code	Title	Hours
HIST 5308	Crime, Policing, and Justice in American History	3

Frontiers and Borderlands

Code	Title	Hours
HIST 5227	American West	3
HIST 5229	Colorado Historic Places	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5621	Explorers and Exploration	3
HIST 5622	Oceans In History	3

Race and Ethnicity

Code	Title	Hours
HIST 5055	The Atlantic Slave Trade: Africa, Caribbean and U.S.	3
HIST 5201	Core Themes in U.S. History	3
HIST 5209	Race, Religion, and Belonging	3
HIST 5212	Civil War and Reconstruction	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5455	African Struggle for Independence	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

Science, Medicine, and Society

Code	Title	Hours
HIST 5076	History of Modern Science	3
HIST 5490	Weapons of Mass Destruction	3

Intellectual History

Code	Title	Hours
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5046	Victorians and Victorianism	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5076	History of Modern Science	3
HIST 5462	Islam in Modern History	3
HIST 5621	Explorers and Exploration	3

Material Culture

Code	Title	Hours
HIST 5133	Management of Material Culture and Museum Collections	3
HIST 5229	Colorado Historic Places	3
HIST 5232	Historic Preservation	3
HIST 5244	Interpretation of History in Museums: Exhibits and Education	3

Migration and Immigration

Code	Title	Hours
HIST 5032	Globalization in World History Since 1945	3
HIST 5071	Modern Germany	3
HIST 5074	Post-War Germany	3
HIST 5201	Core Themes in U.S. History	3
HIST 5227	American West	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5622	Oceans In History	3

Policing and Legal History

Code	Title	Hours
HIST 5201	Core Themes in U.S. History	3
HIST 5308	Crime, Policing, and Justice in American History	3

Indigenous Histories

Code	Title	Hours
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5227	American West	3
HIST 5622	Oceans In History	3

Group 3: Public History

Code	Title	Hours
HIST 5234	History at Work: Public and Community History	3

Memory and Community

Code	Title	Hours
HIST 5229	Colorado Historic Places	3
HIST 5260	Introduction to Digital Studies	3

Museum Studies

Code	Title	Hours
HIST 5133	Management of Material Culture and Museum Collections	3
HIST 5229	Colorado Historic Places	3
HIST 5244	Interpretation of History in Museums: Exhibits and Education	3

Historic Preservation

Code	Title	Hours
HIST 5229	Colorado Historic Places	3
HIST 5232	Historic Preservation	3

Note: *Majors in Public History must follow the Plan of Study for Public History.*

Independent Study and/or Internship

Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to fulfill the research seminar requirement with an independent study or internship. Any independent study or internship at the 6000-level needs the permission of the graduate advisor. Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

Code	Title	Hours
HIST 5840	Independent Study: History	1-3
HIST 6840	Independent Study: HIST	1-3
HIST 6939	Internship	3
Total Hours		5-9

Master's Degree Extended Research Options

The MA program in history offers a set of courses in which students can develop extended research interests. Students must select an advisor and develop a proposal for a specific research agenda in the semester before beginning work on a project.

Required Public History Thesis (HIST 6950 Master's Thesis) **or Project** (HIST 6952 Master's Project: Public History)

Students majoring in public history must complete either a thesis (6 semester hours) or a project (usually 3 semester hours).

Optional Thesis for Students in U.S. Global and European History (HIST 6950 Master's Thesis)
Students majoring in U.S., Global, or European history can choose to write a thesis (6 semester hours in their major field).

Optional Advanced History Curriculum Development (HIST 6951 Masters Project: Advanced History Curriculum Development)
Students who undertake their master's program when they are already teachers or who intend to become teachers can choose to construct curriculum projects relevant to their teaching practice. See the separate section below on "Opportunities for Teachers and Teachers-in-Training."

Code	Title	Hours
HIST 6950	Master's Thesis	1-6
HIST 6951	Masters Project: Advanced History Curriculum Development	1-6
HIST 6952	Master's Project: Public History	1-6

Thesis Requirements

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students will enroll for six credit hours in HIST 6950 Master's Thesis over one or more semesters to complete their theses. Before registering for HIST 6950 Master's Thesis, students should have a thesis proposal and initial bibliography approved by their major advisor.

A thesis is evaluated by a committee of three faculty, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In most instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

Project Requirements

In lieu of a thesis, public history majors may choose to enroll in three credit hours of HIST 6952 Master's Project: Public History to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan or organizing an archival collection, conducting a preservation survey, or other activities as approved by their advisor. Students are required to prepare an analytical paper describing the process and results of their project.

Opportunities for Teachers and Teachers-in-Training

Curriculum Projects

Licensed teachers and students who intend to become teachers may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for each 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the hours from HIST 6951 Masters Project: Advanced History Curriculum Development to either the major

field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document Advanced History Curriculum Development Projects.

- HIST 6951 Masters Project: Advanced History Curriculum Development
(3 or 6 semester hours in their major field, or 3 semester hours in their major and possibly 3 semester hours in their minor, if a student elects to do a second project)

Secondary Teacher Licensure

Students interested in secondary teacher licensure should consult with the School of Education and Human Development (p. 414). See the Urban Community Teacher Education Program for information.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/history/graduate/>).

Public History, MA in History

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

The MA program in history offers graduate-level major and minor fields in public history. Public history is a field of study that applies historical methods to the public sphere. This graduate major requires a concentration, in either museum studies or historic preservation. Public history majors can minor in any subspecialty the department currently offers. Students majoring in U.S., European or Global history can also minor in public history.

Program Requirements

1. Students must complete a minimum of 36 credit hours from approved courses.
2. Students must complete all courses at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete all credits with CU Denver faculty.

Requirements

Code	Title	Hours
Complete the following		3
HIST 6013	Introduction to the Professional Study of History	3

Code	Title	Hours
Complete one of the following		3
HIST 5234	History at Work: Public and Community History	3
HIST 5232	Historic Preservation	3

Code	Title	Hours
Complete one Research Seminar		3

Research seminars focus on students' development of an original, primary research paper.

Code	Title	Hours
Major Electives		9-12
HIST 5133	Management of Material Culture and Museum Collections	3
HIST 5229	Colorado Historic Places	3
HIST 5244	Interpretation of History in Museums: Exhibits and Education	3
HIST 6992	Seminar: Colorado Studies	3

Electives

Code	Title	Hours
Complete the following elective credits		12

Minor Electives

9-12

Minor electives are made up of courses in the minor field, including readings courses, which address specific field historiographies, or research seminars.

Open Elective

0-3

Students may use the open elective to explore a course outside their major or minor or to do extra course work in one of their fields.

Comprehensive Examinations

All history MA candidates must pass a comprehensive examination in the major and minor fields after the completion of course work and before embarking on a thesis, curriculum project or public history project. The comprehensive exam evaluates students' knowledge of their course work and their reading lists for their major, minor and concentration. In answering their exam questions, students are expected to construct arguments and to show mastery of the historiographies, narratives and historical content in their fields. The comprehensive exam is administered and evaluated by a committee of the major advisor, the minor advisor and an outside reader from the history faculty.

Thesis or Project

Code	Title	Hours

Students majoring in public history must complete either a thesis (6 semester hours) or a project (3 semester hours).¹

¹ Students who undertake their master's program when they are already teachers can choose to construct curriculum projects relevant to their teaching practice.

Thesis Requirements

Code	Title	Hours
HIST 6950	Master's Thesis	6

Students writing theses are expected to develop an original research agenda resulting in an extended paper. Students work with their major field advisor, who will help guide them through the process of research and writing. Students enroll in HIST 6950 Master's Thesis to complete their theses. Before registering for HIST 6950 Master's Thesis, students must have a thesis proposal and initial bibliography approved by their advisor.

A thesis is evaluated by a committee of three, including the major advisor and two other faculty members chosen by the student in consultation with the major advisor. Upon completion of the thesis, the student meets with the committee members, who ask questions about the research and conclusions which the student must defend. In many instances, the committee will require further revisions, sometimes major in scope, before the thesis is accepted and cleared for submission to the Graduate School in fulfillment of degree requirements.

Project Requirements

Code	Title	Hours
HIST 6952	Master's Project: Public History	3-6

In lieu of a thesis, public history majors may choose to enroll in one semester of HIST 6952 Master's Project: Public History to complete a public history project. Projects, which are usually conducted in collaboration with a public history organization, can entail creating an exhibit, developing a museum master plan, education program or collection management plan/project, or organizing an archival collection, conducting a preservation survey or similar projects as worked out with their advisor. Students are required to prepare a paper describing the process and results of their project.

Curriculum Projects

Code	Title	Hours
HIST 6951	Masters Project: Advanced History Curriculum Development	3-6

Licensed teachers and teachers-in-training enrolled in the history graduate program may choose to complete a curriculum development project. Students arrange curriculum development projects with a sponsoring faculty member. Generally, students are expected to develop and submit a complete course curriculum plan for this 3-semester-hour project. Projects need to show evidence of familiarity with the relevant historiographies and primary sources. Students may apply the credits from HIST 6951 Masters Project: Advanced History Curriculum Development to either the major field or the minor field, depending on the project subjects. Curriculum plans must meet minimum criteria established by the history department in the document Advanced History Curriculum Development Projects.

Independent Studies and/or Internships

Candidates may register for up to 6 hours of internships or independent study, only one of which may be at the 6000-level. Students will not be allowed to satisfy the research seminar requirement via independent study. *Any independent study or internship at the 6000-level needs the permission of the graduate advisor.* Students interested in pursuing an independent study or internship must find a faculty member willing to oversee their work, and they should expect the workload to equal or exceed that required for other courses at the same level.

Code	Title	Hours
HIST 5840	Independent Study: History	1-3
HIST 6840	Independent Study: HIST	1-3
HIST 6939	Internship	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/history/public-history-program/>).

Global History Graduate Certificate

Introduction

The Global History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in Global History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in Global History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians
- Be able to analyze historical documents and develop arguments from them

Program Delivery

- This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

Declaring This Certificate

- Applicants must have a B.A. or B.S. degree.
- Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

Graduate School Policies and Procedures apply to this program

Program Requirements

1. Students must complete a minimum of 12 HIST credit hours.
2. Students must complete all HIST credit hours at the graduate level (5000 and above).
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the major GPA.
4. All credits for the certificate must be completed with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Take all of the following</i>		6
HIST 6013	Introduction to the Professional Study of History	3
HIST 6931	Readings: Special Subjects in History	3
or HIST 6989	Seminar: Special Subjects in History	

Elective Courses

Code	Title	Hours
<i>Take two of the following</i>		6
HIST 5027	Enlightenment and Revolution	3
HIST 5028	Nations and Classes: 19th Century Europe	3
HIST 5029	Age of Anxiety in Europe	3
HIST 5030	Europe During the World Wars	3
HIST 5032	Globalization in World History Since 1945	3
HIST 5035	Crisis and Transformation: Europe's 20th Century	3
HIST 5046	Victorians and Victorianism	3
HIST 5051	Britain and The Empire	3
HIST 5055	The Atlantic Slave Trade: Africa, Caribbean and U.S.	3
HIST 5062	Modern France: 1789 to the Present	3
HIST 5071	Modern Germany	3
HIST 5074	Post-War Germany	3
HIST 5075	Travel Stories and Origins of Cultural Anthropology	3
HIST 5076	History of Modern Science	3
HIST 5083	Russia Since 1917	3
HIST 5260	Introduction to Digital Studies	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5421	Modern China	3
HIST 5455	African Struggle for Independence	3
HIST 5461	The Modern Middle East	3
HIST 5462	Islam in Modern History	3
HIST 5475	The Vietnam War	3
HIST 5490	Weapons of Mass Destruction	3
HIST 5621	Explorers and Exploration	3
HIST 5622	Oceans In History	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/history/global-history-certificate/>).

U.S. History Graduate Certificate

Graduate School Policies and Procedures apply to this program.

Introduction

The U.S. History Graduate Certificate provides CU Denver graduate students and the wider community the opportunity to explore topics in United States History while simultaneously learning professional skills in historical research and historical dissemination. This Certificate is designed for students interested in pursuing a graduate-level education in United States History and for professionals seeking accreditation and/or promotion in the fields of education, museums, historic preservation, government, law, and the arts.

The certificate can stand on its own or it can serve as a stepping stone to a Master's Degree in History.

Upon successful completion of the certificate, students will:

- Be able to pursue independent historical research projects
- Be able to analyze debates among historians

- Be able to analyze historical documents and develop arguments from them

Program Delivery

- This program has one on-campus requirement and the remainder of the certificate can be completed on campus or online.

Declaring This Certificate

- Applicants must have a B.A. or B.S. degree.
- Interested students must register their intent to complete the certificate with the History Department Graduate Advisor, Ryan Crewe (Ryan.Crewe@ucdenver.edu). Students already enrolled in a graduate program at CU Denver can begin their certificate work at any point during their studies. Non-degree students must apply to the university as a non-degree seeking student.

Program Requirements

1. Students must complete a minimum of 12 HIST credit hours.
2. Students must complete all HIST credits for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
4. Students must complete all HIST credits for the certificate with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Complete the following required courses</i>		6
HIST 6013	Introduction to the Professional Study of History	3
HIST 6931	Readings: Special Subjects in History ¹	3
or HIST 6989	Seminar: Special Subjects in History	

¹ may be taken as an elective, if not taken in this category

Elective Courses

Code	Title	Hours
<i>Take two of the following</i>		6
HIST 5201	Core Themes in U.S. History	3
HIST 5209	Race, Religion, and Belonging	3
HIST 5212	Civil War and Reconstruction	3
HIST 5217	Consumer Culture	3
HIST 5227	American West	3
HIST 5229	Colorado Historic Places	3
HIST 5234	History at Work: Public and Community History	3
HIST 5244	Interpretation of History in Museums: Exhibits and Education	3
HIST 5260	Introduction to Digital Studies	3
HIST 5307	History of Sexuality	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5343	Women & Gender in US History	3
HIST 5494	Red and Blue America: U.S. History, 1973-Present	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/history/us-history-certificate/>).

Humanities

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Program Assistant: Angela Beale

Office: Student Commons 3203

Telephone: 303-315-3565

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Website: <https://clas.ucdenver.edu/mhmss/>

Overview

The Master of Humanities degree program offers graduate interdisciplinary studies designed for recent university graduates or those who have graduated less recently and are now seeking intellectual enrichment, career change or preparation for a PhD or professional school. Some students are teachers or other professionals seeking additional training to expand their expertise. Many enroll in the program for the sheer satisfaction of intellectual enrichment. It is ideal for students whose professional and personal obligations require flexibility and accessibility. Whether they are part-time or full-time students, students are able to pursue their interests across disciplinary boundaries and enroll in courses from a number of departments. Students who pursue the Master of Humanities will take courses from disciplines traditionally included in the category of liberal arts, such as literature, philosophy, history, communication, fine arts, art history, theatre and music. But they may also include appropriate coursework from the social sciences or other areas. Each student's program is supervised by an MH faculty advisor.

Requirements for Admission

General rules for admission into the Graduate School, as well as the following apply to admission into the MH program:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MH degree
- a typed statement specifying the goal of advanced study in the humanities expressed in clear, correct, and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

Provisional Admission

Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

NOTE: Prospective students are in no way required to pursue graduate courses as a non-degree student in order to merit acceptance to the MHMSS program. Taking graduate courses at CU Denver does not guarantee a prospective student acceptance into the MHMSS program.

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program. For further information on non-degree graduate student status, see the Information for Graduate Students (p. 38) section of this catalog. In the case of CU Denver graduate students transferring to the MH program, previous coursework may be accepted as appropriate to the MH plan of study.

International Students

International students must also meet CU Denver requirements for international (p. 44) admission. See the Information for International Students section of this catalog or call 303-315-2230 for further information.

Programs

- Humanities, MH (p. 334)

Faculty

Assistant Professors:

Margaret L. Woodhull, PhD, University of Texas, Austin

Associate Professors:

Omar Swartz, PhD, Purdue University, JD, Duke University

Clinical Teaching Track:

Lorna Hutchison, PhD, McGill University

Humanities (HUMN) Courses

HUMN 5000 - 19th and 20th Century Continental Philosophy (3 Credits)

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4000/5000 and SSCI 5000. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities (3 Credits)

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate Level Students. Cross-listed with PHIL/SSCI 5013. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

HUMN 5020 - Foundations and Theories of Interdisciplinary Social Science (3 Credits)

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical, key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5025 - Foundations and Theories of Interdisciplinary Humanities (3 Credits)

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5025. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5101 - Pragmatism: Classical American Philosophy (3 Credits)

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4101, 5101, SSCI 5101. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5220 - Aesthetics and the Philosophy of Art (3 Credits)

Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4220/5220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5242 - Bioethics (3 Credits)

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, SSCI 5242. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5251 - Introduction to Legal Studies (3 Credits)

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4251/SSCI 4251/SSCI 5251. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5325 - First Amendment: Theory and Context (3 Credits)

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, SSCI 4325, SSCI 5325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5540 - Law, Diversity and Community in United States History (3 Credits)

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5540. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5600 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4600, 5600, RLST 4060, 5060, and SSCI 5600. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5660 - Visual Arts: Interpretations and Contexts (3 Credits)

Provides graduate-level interdisciplinary study in the historiography, methodologies, and theories used to understand how visual arts, including painting, sculpture, photography, film and performance art influence the making of culture. Students gain critical skills for analyzing a variety of visual and aesthetic products of culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5720 - Sexuality, Gender and Their Visual Representation (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse (3 Credits)

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list SSCI 5770. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5833 - Existentialism (3 Credits)

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4833/5833 and SSCI 5833. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5840 - Independent Study: HUMN (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HUMN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

HUMN 5920 - Philosophy of Media and Technology (3 Credits)

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, SSCI 5920. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5924 - Directed Research and Reading in Interdisciplinary Humanities (3 Credits)

The first of the Master of Humanities core courses, this course provides beginning graduate students grounding in critical theorists, key analytic models, and their application in disciplines which comprise the humanities (philosophy, literature, art history, visual studies, history, communication) for the purpose of graduate-level, interdisciplinary humanities research. Examines questions about reality, knowledge, ethics that affect research and writing in the humanities. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Term offered: spring, fall. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Typically Offered: Fall, Spring.

HUMN 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933, WGST 4933/5933 and SSCI 5933. Max Hours: 3 Credits.
Grading Basis: Letter Grade

HUMN 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

HUMN 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Additional Information: Report as Full Time.

HUMN 5960 - Master's Project (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Additional Information: Report as Full Time.

HUMN 5984 - Topics: Interdisciplinary Humanities (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.
Term offered: fall, spring. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 6010 - Methods and Theories of Feminism and Gender (3 Credits)

This course provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender, and sexuality studies and considers how culture is constructed around these categories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with WGST and SSCI 6010. Term offered: fall, spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Humanities, MH

Graduate School Policies and Procedures (p. 59) apply to this program

Please click [here](#) (p. 331) to see more information about the department.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Overview

The Master of Humanities degree offers students the opportunity to individually tailor their studies to meet their needs and interests. In consultation with a faculty advisor, students develop a unique plan of studies by combining fields, such as History, Philosophy, Cultural Studies, Film, Women's and Gender Studies, Public Policy, American Studies, Fine Arts, Sociology, Literature, Anthropology, Communications, Political Science, and Economics.

Our degree programs are designed for part-time or full time students whose professional and personal obligations require a program that is flexible.

Why Interdisciplinary Studies?

While most colleges and universities are organized around traditional disciplines, academic institutions are increasingly recognizing the importance of interdisciplinary research in an emerging global economy and culture. By approaching knowledge and learning through an interdisciplinary model, students integrate and synthesize the methods, tools, theories and concepts of diverse disciplines to tackle questions and research from new angles. By bringing together sometimes disparate and contrasting disciplines, new possibilities for dialog and interaction arise that can address the complex questions and issues that characterize the world today.

Explore the possibilities!

Program Requirements

1. Students must complete a minimum of 36 approved credit hours.
2. Students must complete a minimum of 30 graduate (5000-level and above) approved credit hours.
3. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.

4. Students must complete all coursework with CU Denver faculty. Students may concurrently pursue graduate-level coursework at other CU system campuses with the approval of their MHMSS graduate advisor.

Program Restrictions, Allowances and Recommendations

1. Courses credited toward the MH degree must typically be taken at CU Denver (a maximum of 12 graduate credit hours may be transferred from other institutions after matriculating into the MH program, subject to the MH director's approval).
2. Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree.
3. A maximum of two 4000-level undergraduate courses may apply, with faculty approval.
4. Students wishing to count credits accrued from a study abroad program while pursuing the MH must follow the rules of the Graduate School and must have approval of the program director in advance of studying abroad.
5. An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.
6. A grade below *B-* in any given course will not be counted toward the degree.
7. Only one graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval.
8. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

Required Courses

Code	Title	Hours
<i>Take the following Core Seminar courses</i>		9
HUMN 5013	Methods and Practices of Graduate Interdisciplinary Humanities ¹	3
HUMN 5025	Foundations and Theories of Interdisciplinary Humanities ²	3
HUMN 5924	Directed Research and Reading in Interdisciplinary Humanities ³	3

¹ Must be taken during the first year, offered in the spring only.

² Must be taken during the first year, offered in the fall only.

³ Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed

Electives

Code	Title	Hours
<i>Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest.</i>		21-24

Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.

MH Elective Pathways

General MH Track

Students pursuing the general MH degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration.

Ethnic Studies Track

Students pursuing the Ethnic Studies track explore the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

In addition to the MH Core requirements, students must:

Code	Title	Hours
<i>Take at least one ethnic studies methods/theory course</i>		3
ETST 5000	Research Methods in Ethnic Studies	3
EDFN 5001	Problematising Whiteness: Educating for Racial Justice	3

Code	Title	Hours
<i>Take a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		12
ANTH 5350	Anthropology of Globalization	3
COMM 5270	Intercultural Communication	3
EDFN 5050	Critical Issues in American Education	3
ENGL 5460	Contemporary World Literature	3
ETST 5020	Race, Culture and Immigration	3
ETST 5021	Black and Latino Children in Families and Schools	3
ETST 5030	Race, Religion and Belonging in the United States	3
ETST 5165	Cultural Diversity Awareness in the Workplace	3
ETST 5220	African-American Literature	3
or ENGL 5220	African-American Literature	
ETST 5305	Women of Color Feminisms	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5455	African Struggle for Independence	3
HIST 5462	Islam in Modern History	3
HUMN 5540	Law, Diversity and Community in United States History	3
or SSCI 5540	Law, Diversity and Community in United States History	
HUMN 5770	Imperialism, Post-Colonial Theory & Visual Discourse	3
or SSCI 5770	Imperialism, Post-Colonial Theory, Visual Discourse	
PSCI 4446	Advanced Indigenous Peoples' Politics	3
PSCI 5094	Seminar: Urban Politics	3

PSCI 5145	Indigenous Politics	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5256	Seminar: National Question and Self-Determination	3
PSCI 5446	Advanced Indigenous Peoples' Politics	3
PSCI 5545	Immigration Politics	3
PSCI 5914	Community Organizing and Community Development	3
SOCY 5050	Health Disparities	3
SOCY 5440	Poverty and Social Inequality	3
SOCY 5460	Hate Groups and Group Violence	3
SOCY 5690	Crime and Inequality Over the Life Course	3
SPAN 5020	Spanish Sociolinguistics	3
SPAN 5060	Dialects of the Spanish-Speaking World	3
SPAN 5076	Spanish in Colorado	3
SPAN 5080	Spanish in the United States	3
SPAN 5521	Mexican Literature I: pre-Columbian and Colonial	3
SPAN 5522	Mexican Literature II: 19th to 21st Centuries	3

Complete a project or thesis on an approved ethnic studies related topic.

Health Humanities Track

Health Humanities teaches students to the ways in which humanities disciplines interrogate relationships among health, medicine and society and what those disciplines reveal about biomedical knowledge as well as healthcare policies and practices.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
<i>Take all required foundations courses</i>		6
HEHE 5000	Foundations of Health Humanities ¹	3
HEHE 5100	Foundations of Health Care Ethics ¹	3

Code	Title	Hours
<i>Take a minimum of 12 credit hours of approved health humanities related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		12
ANTH 5290	Anthropology and Public Health	3
COMM 5500	Health Communication	3
COMM 5550	Rhetorics of Medicine & Health	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5235	GIS Applications in the Health Sciences	3
GEOG 5710	Disasters, Climate Change, and Health	3
HEHE 5250	Topics in Media, Medicine and Society	3
HEHE 5350	Narrative Principles and Practices in Healthcare	3
HEHE 5450	Addressing Health Stigma in Social Contexts	3
HEHE 5650	Ethics, Medicine & the Holocaust: Legacies	3
HEHE 5655	Introduction to Public Health Ethics	3
HEHE 5750	Pain, Its Paradoxes & the Human Condition ¹	3
HLTH 6070	International Health Policy and Management	3
PHIL 5242	Bioethics	3
PSCI 5354	Seminar: Environmental Politics and Policy	3

¹ Offered at the Anschutz Medical Campus.

Complete a project or thesis on an approved health humanities related topic.

Philosophy and Theory Track

The Philosophy and Theory Track in the Master of Humanities Program offers students an interdisciplinary approach to studying philosophy, critical theory, and related theories of criticism and analysis in various Humanities disciplines.

In addition to the MH Core requirements, students must:

Code	Title	Hours
<i>Complete a 3 credit philosophy/theory course approved by program director.</i>		3
<i>Complete a minimum of 15 credit hours of approved philosophy/theory related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		15
ANTH 6103	Current Theory in Ethnography	3
ENGL 5420	Film Theory and Criticism	3
HUMN 5013	Methods and Practices of Graduate Interdisciplinary Humanities	3
HUMN 5020	Foundations and Theories of Interdisciplinary Social Science	3
HUMN 5720	Sexuality, Gender and Their Visual Representation	3
HUMN 5984	Topics: Interdisciplinary Humanities	3
PHIL 5101	Pragmatism: Classical American Philosophy	3
PHIL 5220	Aesthetics and the Philosophy of Art	3
PHIL 5242	Bioethics	3
PHIL 5260	Philosophy of Law	3
PHIL 5300	Philosophy of Mind	3
PHIL 5600	Philosophy of Religion	3
PHIL 5730	Philosophy and Literature	3
PHIL 5750	Introduction to Phenomenology	3
PHIL 5780	Heidegger	3
PHIL 5790	Nietzsche	3
PHIL 5795	Marx and Marxism	3
PHIL 5800	Plato	3
PHIL 5810	Aristotle	3
PHIL 5833	Existentialism	3
PHIL 5900	John Dewey	3
PHIL 5920	Philosophy of Media and Technology	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5457	American Political Thought	3
RLST 5060	Philosophy of Religion	3
SOCY 5016	Social Theory	3
WGST 5306	Survey of Feminist Thought	3
WGST 6010	Methods and Theories of Feminism and Gender Studies	3

Complete a project or thesis on an approved philosophy/theory related topic.

Social Justice Track

The Social Justice Track encourages graduate students to broaden and deepen their intellectual tools as well as their practical knowledge as to how democracy, education, consumerism, media, race, class, gender, policy, and law intersect.

It is **highly recommended** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and Research, Evaluation, and Statistical Methodology (RESM), which can be approved by students MHMS program faculty.

In addition to the MH Core requirements, students must:

Code	Title	Hours
<i>Take a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		12
BUSN 6540	Legal and Ethical Environment of Business	3
COMM 5040	Communication, Prisons, and Social Justice	3
ENGL 5190	Advanced Topics in Writing & Digital Studies	3
ENGL 5306	Survey of Feminist Thought	3
HIST 5032	Globalization in World History Since 1945	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5455	African Struggle for Independence	3
PSCI 5025	Local Governance and Globalization	3
HUMN 5720	Sexuality, Gender and Their Visual Representation	3
or SSCI 5720	Sexuality, Gender and Their Visual Representation	
HUMN 6010	Methods and Theories of Feminism and Gender	3
or SSCI 6010	Methods and Theories of Feminism and Gender Studies	
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5225	Democracy and Democratization	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5274	Conflict Resolution and Public Consent Building	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5286	International Relations: War or Peace?	3
PSCI 5414	Non-Profits and Social Change	3
PSCI 5545	Immigration Politics	3
PSCI 5555	International Women's Resistance	3
PSCI 5837	Contemporary Issues in Civil Liberties	3
SOCY 5440	Poverty and Social Inequality	3
SOCY 5460	Hate Groups and Group Violence	3
WGST 5303	Sex and Gender in Modern Britain	3
WGST 5307	History of Sexuality	3
WGST 5345	Gender, Science and Medicine: 1600 to the Present	3

Complete a project or thesis on an approved social justice related topic.

Visual Studies Track

The Visual Studies Track provides students focused studies in disciplines that apply critical analysis to our visual world, such as art history, museum studies, film studies, new media studies, and cultural studies. In a world whose work forces and creative citizenry are focused on the growth and use of visual technologies, visual literacy with sophisticated analytic skills is critical.

In addition to the MH Core requirements, students must:

Code	Title	Hours
<i>Take 3 credit hours of a methods/theory course</i>		3
ENGL 5420	Film Theory and Criticism	3
FINE 5790	Methods in Art History	3
HUMN 5660	Visual Arts: Interpretations and Contexts	3

Code	Title	Hours
<i>Take a minimum of 18 credit hours of approved visual arts related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		18
ARCH 5210	Introduction to Architecture	3
ARCH 5220	History and Theory Architecture I	3
ARCH 5230	History and Theory Architecture II	3
ARCH 6210	A History of American Architecture	3
ARCH 6212	A History of Modern Architecture	3
ARCH 6220	A History of Theoretical Discourse on Architecture	3
COMM 5621	Visual Communication	3
ENGL 5770	Topics in English: Film and Literature	3
FINE 4990	Contemporary Art: 1960 to Present	3
FINE 5524	Topics in Art History II: Modern and Contemporary	3
FINE 5610	Pre-Columbian Art	3
FINE 5620	American Art	3
FINE 5632	History of Digital Media	3
FINE 5680	Art of the Middle Ages	3
FINE 5700	Italian Renaissance Art	3
FINE 5705	Northern Renaissance Art	3
FINE 5710	Baroque and Rococo Art	3
FINE 5730	Arts of Japan	3
FINE 5750	Arts of China	3
FINE 5770	Art of India and Southeast Asia	3
FINE 5990	Contemporary Art:1960-Present	3
HIST 5232	Historic Preservation	3
HUMN 5720	Sexuality, Gender and Their Visual Representation	3
PHIL 5220	Aesthetics and the Philosophy of Art	3
PHIL 5920	Philosophy of Media and Technology	3

Complete a project or thesis on an approved visual arts related topic.

Women's and Gender Studies Track

Students pursuing the WGST track, focus on issues of sex and gender as they manifest in societies through culture, language, politics, visual representation, and history.

In addition to the MH Core requirements, students must:

Code	Title	Hours
<i>Complete at least one WGST theory course</i>		3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306	Survey of Feminist Thought	
WGST 5500	Feminist Philosophy	3
or PHIL 5500	Feminist Philosophy	
WGST 6010	Methods and Theories of Feminism and Gender Studies	3
or HUMN 6010	Methods and Theories of Feminism and Gender	

or SSCI 6010	Methods and Theories of Feminism and Gender Studies	
Code	Title	Hours
<i>Take a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		12
CRJU 5910	Nature and Scope of Interpersonal Violence	3
CRJU 5930	Interpersonal Violence Law and Public Policy	3
ENGL 5000	Studies of Major Authors (when the author is a female)	3
ETST 4827	Women and the Law	3
or PSCI 4827	Women and the Law	
HUMN 5770	Imperialism, Post-Colonial Theory & Visual Discourse	3
or SSCI 5770	Imperialism, Post-Colonial Theory, Visual Discourse	
PSCI 4215	Women's Rights, Human Rights: Global Perspectives	3
PSCI 4564	Gender and Politics	3
PSCI 5245	Gender, Globalization and Development	3
SOCY 5550	Seminar: Sociology of the Family	3
WGST 5230	Women in the West	3
WGST 5248	Gender, Globalization and Development	3
or PSCI 5245	Gender, Globalization and Development	
WGST 5303	Sex and Gender in Modern Britain	3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306	Survey of Feminist Thought	
WGST 5307	History of Sexuality	3
WGST 5308	Contemporary Feminist Thought	3
or ENGL 5308	Contemporary Feminist Thought	
or PHIL 5308	Contemporary Feminist Thought	
WGST 5345	Gender, Science and Medicine: 1600 to the Present	3
WGST 5420	Goddess Traditions	3
WGST 5500	Feminist Philosophy	3
or PHIL 5500	Feminist Philosophy	
WGST 5510	Whores and Saints: Medieval Women	3
WGST 5511	French Women Writers	3
WGST 5555	International Women's Resistance	3
or PSCI 5555	International Women's Resistance	
WGST 5720	Sexuality, Gender and Their Visual Representations	3
or HUMN 5720	Sexuality, Gender and Their Visual Representation	
or SSCI 5720	Sexuality, Gender and Their Visual Representation	

Complete a project or thesis on an approved women's and gender studies related topic.

Thesis or Project and Oral Defense

Code	Title	Hours
<i>Complete a Thesis or Project and an oral comprehensive defense of that work, in order to graduate.</i>		3-6

In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.

HUMN 5950	Master's Thesis	6
HUMN 5960	Master's Project	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mhmss/mhmss-degree-information/>).

Integrated Sciences

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Overview

The Master's program in Integrated Sciences (MIS) is designed to provide a broad-based, content-rich curriculum that integrates knowledge and methods from natural and physical sciences, mathematics, and computer science disciplines. MIS is a 30 semester-hour interdisciplinary program in which students take courses from two or three disciplines, identify a faculty mentor, and complete a Master's project or thesis. The signature aspect of the program is that the capstone experience must truly integrate the interdisciplinary content into a unified program of research.

Specifically, students are required to complete a coherent selection of classes in a minimum of two areas and a maximum of three areas within the disciplines of biology, chemistry, computer science, environmental sciences, geology, mathematics or physics. An interdisciplinary area of study (including but not limited to fields such as biochemistry, biophysics, or computational biology) may also be considered, upon approval by the Program Director. Each student must meet with the Program Director within the first semester of study to develop a program goal statement, which is used to guide his or her individualized curriculum. All classes applied toward the degree must be related to the student's stated program goal and receive prior approval for inclusion in the program of study.

The MIS curriculum is ideal for students interested in bridging the traditional barriers of science disciplines. It is perfect preparation for a broad range of careers that require skills in multiple areas, disciplines, and fields.

MIS students are as diverse as our curriculum. Some are already working in a technical environment with an interest in higher-level research activities. Others are educators looking to enhance their proficiency across disciplines that will prepare them for teaching opportunities such as CU Succeed and other concurrent enrollment programs.

Our program is especially attractive to graduating double majors seeking a Master's program that will allow them to further explore their dual interests through graduate school. Health science professionals have used the program to enhance their existing credentials with a Master's degree designed around biochemistry, biophysics, or computational biology, thus increasing their desirability to PhD and MD programs.

Admission Requirements

Admission into the Integrated Sciences program is competitively based. Minimum requirements for an application to be considered are:

- the graduate application form for the University of Colorado Denver, including all application fees
- a statement of purpose specifying why the applicant wishes to be admitted to the program, the applicant's primary and secondary disciplines of interest, and their academic and professional goals
- three letters of recommendation from individuals who can speak to the applicant's academic qualifications, of which at least two must be from academic sources
- transcripts from all institutions of higher learning attended by the applicant
- a bachelor's degree from an accredited college or university
- a minimum cumulative undergraduate GPA of 3.0 on a 4.0 scale; however, applicants with an undergraduate GPA below 3.0 may be considered if they have taken the Graduate Record Examination (GRE) and if the scores are forwarded to the program office
- 40 semester hours of undergraduate courses in biology, chemistry, computer science, environmental sciences, geology, mathematics, and/or physics

Possessing the minimum requirements will guarantee that the application is considered. It does not, however, guarantee admission. The admissions committee will select students competitively to create a high-quality and balanced cohort of participants entering the program each year.

Application Deadline

Students are admitted for the spring and fall semesters. Applications are reviewed on a rolling basis. Priority deadlines for completed applications are April 15 for fall admission and October 15 for spring admission.

Programs

- Integrated Sciences, MIS (p. 340)

Master of Integrated Sciences (MINS) Courses

MINS 5000 - Topics (3-4 Credits)

With prior approval by a candidate's advisor, an MIS candidate may enroll in an upper division course in science, computer science, mathematics, and complete additional work for graduate credit. Prereq: MIS candidate with 12 hours of upper division (4000 level) or graduate level work completed. Term offered: fall, spring, summer. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: MIS candidate with 12 hours of approved coursework completed and Program Director approval.

MINS 5200 - Research Methods in Interdisciplinary Science (3 Credits)

This course introduces methods used in interdisciplinary research in the physical and natural sciences, mathematics, and computer science and prepares students for developing research-based Master's project/thesis proposals. Topics include the scientific method and ethics, experimental design, data collection and analysis, literature searches, evaluation of scientific literature, scientific writing, and oral presentation. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5880 - Directed Research (1-3 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5939 - Internship (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5950 - Master's Thesis (1-6 Credits)
Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 6.
Prereq: MIS Candidate and Program Director approval (consent required).
Additional Information: Report as Full Time.

MINS 5960 - Master's Project (1-4 Credits)
Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Prereq: MIS Candidate and Program Director approval (consent required).
Additional Information: Report as Full Time.

Integrated Sciences, MIS

Graduate School Policies and Procedures (p. 59) apply to this program

Please click here (p. 338) for more information on the Integrated Sciences program.

Introduction

Students in the Integrated Sciences program have the opportunity to take courses from a variety of areas in mathematics, the natural and physical sciences (biology, chemistry, environmental sciences, geology, and physics), and computer science in an interdisciplinary STEM program designed for professional growth in their area of interest. These areas are further explored through a required project or thesis that includes focused independent research on a topic that integrates two or three of the disciplines mentioned above.

The length of time it takes to complete the degree is determined by the student's own schedule flexibility; many finish within two years of full-time work. In accordance with Graduate School Rules, the degree must be completed within seven years of matriculation.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with the Program Director to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete a minimum of 30 credits from approved coursework.
2. Students must complete a minimum of 24 graduate (5000 level and above) credit hours. Under exceptional circumstances and only with approval of the Program Director, a maximum of 6 credit hours may be at the 4000-level.
3. Students must earn a minimum grade of B- (2.7) in those courses applied to the degree and taken at CU Denver, and must maintain a

minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program requirements as pass/fail.

4. All credits for the program must be completed with CU Denver faculty. The Graduate School policies allow concurrent enrollment at CU Boulder or UCCS to be counted in residence, and allow up to 12 credit hours in transfer courses, with approval of the Program Director.

Program Restrictions, Allowances and Recommendations

1. The graduate school will allow up to 12 hours of graduate transfer credits (dependent on a B grade or better). However these credits must fit the student's program goal in order to apply to the MIS degree and be approved by the program director.
2. No coursework may be applied that will be older than seven years on the day of graduation. For more information please contact the program director.
3. Students must complete a minimum of 9 credit hours in the primary concentration and a minimum of 6 credit hours in a secondary concentration (all 5000+ level).

Graduate Research Advisor and Examination Committee

All candidates for the MIS degree must select a faculty research advisor and arrange for two other faculty members to serve with the research advisor as the candidate's graduate examination committee. The committee members must have graduate standing at the University of Colorado Denver and be approved by the Program Director. The name of the faculty research advisor must be submitted to the Program Director at the start of the third semester following matriculation to the program.

Core Requirement

Code	Title	Hours
<i>Take the following within the first year of the program.</i>		3
<i>This course serves as an introduction to the program and helps students to develop research skills and to further their professional development.</i>		
This course is offered in the fall semester only.		
MINS 5200	Research Methods in Interdisciplinary Science	3

Concentration and Breadth Requirements

The student must designate one area of concentration (the primary area of study) and one or two breadth areas (the secondary and, if applicable, tertiary areas of study) within the disciplines of biology, chemistry, computer science, environmental sciences, geology, mathematics or physics. An interdisciplinary area of study (including but not limited to fields such as biochemistry, biophysics, or computational biology) may also be considered, upon approval by the Program Director.

Code	Title	Hours
<i>The student must complete a minimum of nine semester hours in the chosen area of concentration and a minimum of six semester hours in each breadth area for a minimum total of 15 credit hours.</i>		15
<i>Concentration</i>		9
<i>Depth</i>		6

Project or Thesis Requirement

The program provides students with two options as their capstone experience, either a project or a thesis, depending on their academic and professional goals. All students must conduct independent research integrating coursework from the disciplines in their program of study. The research is conducted as either a project (requiring 3-4 semester-hours of MINS 5960 Master's Project) or a thesis (requiring 4-6 semester-hours of MINS 5950 Master's Thesis), and is presented to their examination committee in both written and oral forms. The student must successfully defend their project/thesis in an oral examination (defense) in order to graduate. Prior to enrolling in Project or Thesis hours, all students must submit a proposal approved by three faculty members (one of whom is their graduate faculty research advisor) and the Program Director.

Code	Title	Hours
<i>Complete the following</i>		3-6
MINS 5950	Master's Thesis	4-6
MINS 5960	Master's Project	3-4

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mis/degree-information/learning-goals-and-objectives/>).

Integrative Biology

Chair: John G. Swallow

Associate Chair: Amanda Charlesworth

Program Assistant: Barbara Schmidt, Barbara McClure

Administrative Assistant: Jacki Craig

Graduate Program Director: Brian Buma

Graduate Program Coordinator: Virginia Ware

Health Careers Advising: Charles A. Ferguson, Gene Brooks, Trishia Vasquez, Kenneth English

BA/BS-MD Program Coordinator: Kenneth English

Lab Coordinator: James Salmen

Office: Science, 2071

Telephone: 303-556-8440

Fax: 303-556-4352

Website: clas.ucdenver.edu/biology/ (<http://clas.ucdenver.edu/biology/>)

Overview

MS in Biology

The MS in Biology program offers students the opportunity to receive advanced training and research experience in an area of specialization of one of our nationally and internationally recognized faculty members. The master's program is designed to prepare graduate students for careers in research and teaching; for employment in business, industry and government; for existing career advancement; and for continuing post-baccalaureate work in PhD and professional programs. Students in the program specialize in fields ranging from cell and molecular biology to ecology and evolution.

The master's program is a research-based program. Applicants to the program must have a declared area of specialization that aligns with the research focus of a biology graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website (clas.ucdenver.edu/biology/ (<http://clas.ucdenver.edu/biology/>)). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Click here (p. 346) to learn about the **Biology MS** requirements.

PhD in Integrative and Systems Biology

The PhD program in Integrative and Systems Biology at the University of Colorado Denver is a multidisciplinary, dual campus program that offers students opportunities to address complex questions in biology using computational, laboratory and field approaches. The more than 40 program faculty members allow students to participate on a diversity of projects at all levels of biological organization, ranging from ecology and environmental microbiology to biochemistry, developmental biology and neuroscience. Depending on the track an incoming student chooses, the approach will either be to explore the problem at multiple levels of biological organization (integrative biology) or to explore the multi-component nature of a biological system (systems biology).

The PhD program is research-based. Applicants to the program must have a declared area of specialization that aligns with the research focus of a program graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website (clas.ucdenver.edu/biology/ (<http://clas.ucdenver.edu/biology/>)). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Click here (p. 347) to learn about the **Integrative and Systems Biology PhD** requirements.

Requirements for Admission MS

- A BA/BS from an accredited institution awarded within the last 10 years (validation of current content may be required)
- Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions
- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure the availability of a position and appropriate research interests

Prerequisite courses required:

- One year of general biology (lecture and laboratory)
- One year of any combination of chemistry, physics or mathematics
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

Application deadline is December 1 for both domestic U.S. and international students. Application to the master's in biology program is through CU Denver Admissions.

Requirements for Admission PhD

- A BA/BS or MS from an accredited institution awarded within the last 10 years (validation of current content may be required). Minimum undergraduate GPA: 3.0
- TOEFL: required for international applicants from countries in which English is not the official language
- 3 letters of recommendation
- Official transcripts from all attended institutions

- Students are required to contact faculty in advance. Prior to application, applicants must have identified and contacted an available Faculty Advisor to ensure availability of a position and appropriate research interests

Prerequisite courses required:

- One year of General Biology is preferred. Where needed, supplementary courses or reading programs may be designed to provide background information of sufficient depth for the Program curriculum
- One course in applied or biological statistics (through regression and ANOVA)
- Additional prerequisite requirements may be set by individual faculty

Applications will be considered annually starting December 1 for both domestic US students and international students. Application to the PhD program is through CU Denver Admissions.

Programs

- Biology, MS (p. 346)
- Integrative and Systems Biology, PhD (p. 347)

Faculty

Professors:

Michael J. Greene, PhD, Oregon State University
Roderick Nairn, PhD, University of London
Bradley J. Stith, PhD, Washington State University
John G. Swallow, PhD, University of Wisconsin Madison
Diana F. Tomback, PhD, University of California, Santa Barbara

Associate Professors:

Amanda Charlesworth, PhD, University College, London
Greg Cronin, PhD, University of North Carolina at Chapel Hill
Laurel Hartley, PhD, Colorado State University
Christopher J. Phiel, PhD, Thomas Jefferson University
Timberley M. Roane, PhD, University of Arizona
Alan Vajda, PhD, University of Colorado Boulder
Michael Wunder, PhD, Colorado State University

Assistant Professors:

Sara Branco, PhD, University of Chicago
Brian Buma, PhD, University of Colorado Boulder
Carlos Infante, PhD, Harvard University
Christopher S. Miller, PhD, University of California Los Angeles
Annika Mosier, PhD, Stanford University
Gregory Ragland, PhD, University of North Carolina Chapel Hill

Senior Instructors:

Hannah Anchordoquy, PhD, University of Colorado Boulder
Laurel Beck, PhD, Michigan State University
Gene Brooks, DDS, University of Missouri
Cheri A. Jones, PhD, University of Florida
David Knochel, PhD, University of Colorado Boulder
Lisa Johansen, PhD, University of Alabama
Molly Nepokroeff, PhD, University of Wisconsin Madison
Kimberly F. Regier, EdD, University of Colorado Denver

Clinical Assistant Professors:

Tod Duncan, PhD, University of College London

Emeritus Faculty:

Gerald Audesirk, PhD, California Institute of Technology
Teresa E. Audesirk, PhD, University of Southern California
Leo P. Bruederle, PhD, Rutgers, the State University of New Jersey
Linda K. Dixon, PhD, University of Illinois
John H. Freed, PhD, Stanford University
Charles A. Ferguson, PhD, University of Colorado Boulder

Biology (BIOL) Courses

BIOL 5024 - Introduction to Biotechnology (3 Credits)

Introduces aspects of biotechnology within a historical context, including medical, forensic, agricultural and microbial biotechnology. Addresses principles behind state-of-the-field techniques in recombinant DNA technology, bioinformatics, proteomics and genomics. Biotechnology regulations and ethics will also be discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4024. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus.

BIOL 5050 - Advanced Biology Topics (1-8 Credits)

Examines current topics in the field of biology. Topics vary from term to term. See Schedule Planner for current topics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4050.

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 5052 - Advanced Ecology (3 Credits)

This combination seminar and lecture course focuses on state-of-field knowledge, current theories and recent models in selected areas of ecology, such as theoretical ecology, evolutionary ecology, population biology and ecosystems ecology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4052. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5053 - Disease Ecology (3 Credits)

The study of the underlying principles that influence the spatio-temporal patterns of infectious disease in environments. Students will apply ecological theories about concepts such as biodiversity, trophic interactions, landscape structure, and nutrient cycling to the study of disease. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4053. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5055 - Virology (3 Credits)

This is an upper level undergraduate/graduate class providing an in-depth study of the history of virology, different types of viruses, viral disease, research to combat viral infections, and different uses of viruses in biotechnology. Note: Students will not earn credit for this course if they have already earned credit for BIOL 4051 or BIOL 5051. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4055. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5064 - Cell Biology of Disease (3 Credits)

Builds on the foundations laid in the prerequisite courses. How alterations in membrane transport, autophagy, mitochondria, lysosomes, cilia, unfolded protein response and autophagy lead to major human diseases. A major emphasis is the control and integration of cellular activities. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4064. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5125 - Molecular Biology Lab (3 Credits)

Provides hands-on experiences in molecular biology and an appreciation for using the tools of molecular biology to study biological systems. Emphasis is placed on DNA cloning, PCR, mRNA and protein detection in the context of gene editing. Experimental design and the theories underlying the techniques are also discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4125. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus.

BIOL 5126 - Molecular Genetics (3 Credits)

Examines molecular techniques and their application to experimental genetics, specifically organization and mapping of genomes, application and model systems in defining hereditary components of disease, and mechanisms of identifying mutations and their implications for disease. Also addresses application of recombinant DNA technology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4126. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5134 - Human Genetics (3 Credits)

Advanced survey of the current status of the field. Emphasis on understanding, diagnosis and treatment of genetic disease and on the impact of molecular biology on human genetics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4134. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5144 - Medical Microbiology (3 Credits)

Provides an understanding of the relationship between pathogenic organisms and their host. Emphasis is placed on the area of medical bacteriology, with attention given to mechanisms of pathogenesis, genetics of disease, serology and treatment. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4144. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5154 - Conservation Biology (3 Credits)

Basic concepts and theories in population biology and genetics as they apply to issues relating to the preservation of biodiversity, such as the genetics of small populations, captive propagation, restoration ecology and the design of nature reserves. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4154. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5165 - Neurobiology (3 Credits)

Overview of neuroscience, covering the cellular basis of neuronal activity, muscle, sensory structures and the structure and function of the human brain. Restriction: Restricted to degree-granting graduate programs.

Cross-listed with BIOL 4165. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5225 - Genomics and Bioinformatics (3 Credits)

Explores how genome-wide data are collected and analyzed. Example applications include human disease, microbial evolution, ecological genomics, and parasite drug resistance. Students implement projects based on real DNA sequencing data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4225. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5250 - Mechanisms of Animal Behavior (3 Credits)

The proximate and ultimate mechanisms of animal behavior are analyzed using comparative animal examples from the scientific literature. Proximate mechanisms include genetic and physiological processes. Ultimate mechanisms include the role of natural and sexual selection in the evolution of behavior. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4250. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5335 - Plant Science (4 Credits)

Lecture, lab and field trips. An in-depth study of flowering plants, including embryology, structure, function, reproduction, ecology and evolution of the group. Emphasis is placed upon morphology and anatomy at all stages of plant development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4335. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5345 - Flora of Colorado (4 Credits)

Lecture, lab and field trips. Introduces the vascular plant flora of Colorado, including ferns, gymnosperms and flowering plants. Emphasis on field identification of species representing a range of natural communities from grassland to alpine tundra, as well as non-natives. Field and herbarium techniques covered. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4345. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5415 - Microbial Ecology (3 Credits)

An in-depth study of ecology as it relates to microorganisms; abiotic and biotic interactions within microbial populations in macro- and microhabitats; and the role of microorganisms in maintaining steady state conditions in natural ecosystems. Emphasis is placed on how the ecology of microorganisms affects the human condition. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4415. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5425 - Biogeography (3 Credits)

An in-depth study of biological populations through analysis of geographic distribution patterns in space and time. Emphasis on how biogeography informs studies of evolution and ecology and on applied studies in conservation, sustainability, epidemiology, and disease dynamics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4425. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5430 - Introduction to Spatial Ecology (3 Credits)

Focuses on patterns of life and ecological interactions in space. Emphasis on drivers of patterns, practical application of spatial ecology software, programming, and introductory spatial statistics on the quantification of patterns. Main topics: Scale and scaling, pattern development, detecting and characterizing patterns, temporal dynamics, and implications of spatial structure to conservation biology, resilience, and ecosystem functioning. Cross-listed with BIOL 4430. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5460 - Environmental Toxicology (3 Credits)

Text and literature-based course provides students with background knowledge concerning environmental toxins, the nature and extent of environmental contamination, and toxicant effects on individual organisms and populations. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5464 - Exercise Physiology (3 Credits)

This course addresses the dynamic physiological changes associated with exercise. Where human physiology addresses physiological processes at rest, this course explores how the cardiovascular, respiratory, nervous and endocrine systems support increased energy transfer as skeletal muscle becomes more active. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4464. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5494 - Population and Evolutionary Genetics (3 Credits)

Introduces the genetic processes underlying evolutionary change in microbial, plant and animal populations. Topics include: sources of variation, Hardy-Weinberg equilibrium, population genetic structure, natural selection and other evolutionary forces, quantitative genetics and molecular phylogenetics. Emphasis on experimental data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4494. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5550 - Cell Signaling (3 Credits)

Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4550. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5634 - Biology of Cancer (3 Credits)

Cancer is the second leading cause of death in the United States. This course offers an overview of recent research into the causes, treatments and possible prevention of cancer. Includes a detailed look at the mechanisms of action of various oncogenes. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4634. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5644 - Advanced Human Anatomy Laboratory (2 Credits)

Advanced laboratory course in human anatomy. In-depth look at the structural aspects of the human body, emphasizing function. Models, microscope slides, and visual media will supplement cadaver-based dissections. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4644. Term offered: fall, spring. Max hours: 2 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5815 - Structural Biology of Neurodegenerative Diseases (3 Credits)

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 4815. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5825 - Biochemistry of Metabolic Disease (3 Credits)

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, CHEM 5825, and BIOL 4825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5835 - Biochemistry of Gene Regulation and Cancer (3 Credits)

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4835, CHEM 5835, and BIOL 4835. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5840 - Independent Study: BIOL (1-3 Credits)

Note: Registration by special processing form only. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to degree-granting graduate programs

BIOL 5910 - Field Studies (3 Credits)

Field studies of individuals, populations and communities comprising a specified ecosystem. Emphasis on field identification of vascular plants and vertebrate animals. Topics include the physical environment, biotic and abiotic interactions, life history, ecological adaptations and biogeography. Note: Lectures and a week-long field trip. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4910. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5939 - Internship (1-6 Credits)

Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval.

Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 5974 - Advanced Evolution (3 Credits)

A capstone course that draws upon concepts from all fields of biology. Topics include the fossil record mass extinctions, the historical development of the modern synthesis, principles and mechanisms of evolution, current viewpoints and controversies. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4974. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6002 - Biology Skills Sets - Pedagogy (2 Credits)

The purpose is to introduce sound practice in teaching and innovation in pedagogy. Topics covered will include assessment techniques, creation of learning goals, and research methods in biological education.

Restriction: Restricted to degree-granting graduate programs. Term offered: fall. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6655 - Seminar (1 Credit)

Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4990. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

BIOL 6705 - Biological Research Workshop (2 Credits)

For graduate and advanced undergraduate students who are directly engaged in original research. Provides introduction to the discovery dissemination and peer review process associated with writing research proposals, manuscripts, and grants, as well as poster and oral presentations. Students will workshop each other's original research. Graduate students enroll in 6705; research-active undergraduates enroll in 5705. Cross-listed with BIOL 5705. Prereq: Students involved in original research and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Restriction: Restricted to degree-granting graduate programs

BIOL 6764 - Biological Data Analysis (4 Credits)

Addresses quantitative aspects of research design, data collection and analysis in the biological sciences. Emphasizes relationships among probability theory, estimation, testing, inference, and interpretation. Includes intensive computer lab using the statistical programming software R to demonstrate both traditional analytical and contemporary simulation based (permutation, bootstrap, and Bayesian) approaches for inference in biology. Restriction: Restricted to degree-granting graduate programs. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to degree-granting graduate programs

BIOL 6950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

Additional Information: Report as Full Time.

BIOL 7010 - Integrative and Systems Biology (3 Credits)

Addresses current research problems in integrative biology and system biology by surveying the peer-reviewed literature. Particular attention will be paid to research topics that integrate multiple levels of biological organization and that investigate how properties of systems emerge from interactions of sub-units. Note: New students in the Integrative and Systems Biology PhD program will enroll in this course during their first year. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 7050 - Special Topics (1-3 Credits)

Readings in current biology topics. Specific topics vary and may be proposed by groups of graduate students who identify a suitable faculty instructor or by a faculty member who identifies a need for advanced study in a specialized topic of biology. Restriction: Restricted to degree-granting graduate programs. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 7650 - Research in Integrative and Systems Biology (1-10 Credits)
Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Ph.D. student and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 10 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 10.
Restriction: Restricted to degree-granting graduate programs

BIOL 7920 - Directed Reading/Grant Writing (3 Credits)
Allows students to examine current literature related to their specialty area of biological research and to work in collaboration with a research mentor to develop a grant-based dissertation proposal in preparation for the comprehensive review examination. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to degree-granting graduate programs

BIOL 8990 - Doctoral Dissertation (1-10 Credits)
Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 60 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 60.
Restriction: Restricted to degree-granting graduate programs
Additional Information: Report as Full Time.

Biology, MS

Graduate School Policies and Procedures (p. 59) apply to this program.

Graduate Program Director: Brian Buma
E-mail: Brian.Buma@ucdenver.edu
Graduate Program Coordinator: Ginny Ware
E-mail: Virginia.Ware@ucdenver.edu
Website: <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs> (<https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs/>)

Introduction

The MS in Biology program offers students the opportunity to receive advanced training and research experience in an area of specialization of one of our nationally and internationally recognized faculty members. The master's program is designed to prepare graduate students for careers in research and teaching; for employment in business, industry and

government; for existing career advancement; and for continuing post-baccalaureate work in PhD and professional programs. Students in the program specialize in fields ranging from cell and molecular biology to ecology and evolution.

The master's program is a research-based program. Applicants to the program must have a declared area of specialization that aligns with the research focus of a biology graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website (clas.ucdenver.edu/biology/). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Program Requirements

Students matriculate into the research-based MS degree program. Under unusual circumstances, students and/or advisors may petition for a student to switch into the coursework-based MS degree program. The research-based MS program requires a minimum of 30 credits, and the coursework-based MS program requires a minimum of 32 credits. No double-counted courses will be applied to the degree. A maximum of 12 hours of graduate level courses may be transferred and counted toward the degree in either program. Both programs additionally require the student to meet minimum academic residency requirements, to form an advisory committee and to deliver and orally defend written work before the advisory committee, which constitutes the final exam for both programs as required by the Graduate School. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the GPA. Students cannot complete course requirements as pass/fail.

Research-based MS degree program **requires**

1. Completing 30 credits including 3-6 thesis (BIOL 6950 Master's Thesis)
2. Meeting minimum academic residency requirements
3. Forming and meeting regularly with an advisory committee
4. Writing and defending research proposal
5. Writing and defending research thesis (including a publishable paper)

Required Courses

Code	Title	Hours
Complete the following		12
BIOL 6002	Biology Skills Sets - Pedagogy (required only for students supported by a Graduate Teaching Assistantship)	2
BIOL 6655	Seminar (take in 2 different years)	2
BIOL 6705	Biological Research Workshop (take in 2 different years)	4
BIOL 6764	Biological Data Analysis (take in Year 1)	4

Electives

Code	Title	Hours
<i>Students should complete a minimum of 12 credits from graduate level Biology coursework.</i>		12

Additional Minimum Requirements

Research-Based

Code	Title	Hours
<i>Complete a thesis, unless approved to complete coursework-based MS</i>		
BIOL 6950	Master's Thesis	3-6

To learn more about the Student Learning Outcomes for this program, please visit our website. (https://clas.ucdenver.edu/integrative-biology/sites/default/files/attached-files/biology_ms_learning_goals_2020_0.pdf)

Integrative and Systems Biology, PhD

Graduate School (p. 59) Policies and Procedures apply to this program.

Graduate Program Director: Brian Buma

E-mail: Brian.Buma@ucdenver.edu

Graduate Program Coordinator: Ginny Ware

E-mail: Virginia.Ware@ucdenver.edu

Website: <https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs> (<https://clas.ucdenver.edu/integrative-biology/academics/graduate-programs/>)

Introduction

The PhD program in Integrative and Systems Biology at the University of Colorado Denver is a multidisciplinary, dual campus program that offers students opportunities to address complex questions in biology using computational, laboratory and field approaches. The more than 40 program faculty members allow students to participate on a diversity of projects at all levels of biological organization, ranging from ecology and environmental microbiology to biochemistry, developmental biology and neuroscience. Depending on the track an incoming student chooses, the approach will either be to explore the problem at multiple levels of biological organization (integrative biology) or to explore the multi-component nature of a biological system (systems biology).

The PhD program is research-based. Applicants to the program must have a declared area of specialization that aligns with the research focus of a program graduate faculty member. Faculty expertise can be found undergraduate faculty profiles on the Department of Integrative Biology website (clas.ucdenver.edu/biology/). Students must contact prospective faculty advisors to determine if openings are available within the faculty member's research group.

Program Requirements

The PhD degree requirements comprise six phases. First, students must complete a minimum of 60 credits, including 30 dissertation credits. Up to 30 hours of graduate level courses from other programs may be transferred and counted toward the degree. Students must also pass the Preliminary Exam, form an Advisory Committee and an Examination Committee, meet the academic residency requirement, pass the comprehensive exam, and write and orally defend a dissertation. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the GPA. Students cannot complete course requirements as pass/fail.

Research-based PhD degree program **requires**

1. Completing 60 credits including 30 of dissertation (BIOL 8990 Doctoral Dissertation)
2. Meeting minimum academic residency requirements
3. Passing the Preliminary Exam
4. Forming Advisory and Examination committees
5. Writing and defending research proposal
6. Passing the Comprehensive Exam
7. Writing and defending dissertation (including >1 publishable unit)

Required Courses

Code	Title	Hours
<i>Take all of the following</i>		<i>16-18</i>
BIOL 6002	Biology Skills Sets - Pedagogy (taken in the first year; only required for students supported by a Graduate Teaching Assistantship)	2
BIOL 6655	Seminar (taken two different times in the student's career)	2
BIOL 6705	Biological Research Workshop (taken two different times in the student's career)	4
BIOL 6764	Biological Data Analysis (taken in the first year)	4
BIOL 7010	Integrative and Systems Biology (taken in the first year)	3
BIOL 7050	Special Topics (a minimum of 3 credits must be completed, but students may take up to 9 credits)	3

Electives

Code	Title	Hours
<i>Students should complete a minimum of 12 credits from graduate level Biology coursework.</i>		<i>12</i>

Dissertation

Code	Title	Hours
<i>Complete after passing the Comprehensive Exam</i>		<i>30</i>
BIOL 8990	Doctoral Dissertation	1-10
30 total credit hours to be completed		

To learn more about the Student Learning Outcomes for this program, please visit our website. (https://clas.ucdenver.edu/integrative-biology/sites/default/files/attached-files/biology_phd_learning_goals_2020.pdf)

Mathematical and Statistical Sciences

Chair: Julien Langou

Associate Chair: Stephen Hartke

Program Assistant II: Maria Rase

Administrative Assistant III: Kylie Parish

IT Senior Professional: Joseph Malingowski

Office: Student Commons Building, 4th Floor

Telephone: 303-315-1700

Fax: 303-315-1704

Website: www.math.ucdenver.edu (<http://www.math.ucdenver.edu>)

Department Email: MathStaff@ucdenver.edu

Overview

The Department of Mathematical and Statistical Sciences at the University of Colorado Denver offers degrees and certificates at the undergraduate and graduate levels in mathematics, applied mathematics, data science, and statistics through coursework, research and industrial collaboration. Traditional courses such as calculus, linear algebra, probability, statistics and discrete mathematics are offered regularly by the department. In addition, contemporary subjects such as high-performance computing; numerical analysis, optimization, statistical methods, and operations research are also well represented by course offerings and faculty interests. In all of its activities, the department embodies the outlook that mathematics, statistics, computing and data science are powerful tool that can be used to solve problems of immediate and practical importance.

Apart from the specialized mathematical and statistical skills acquired through course work, the degrees and certificates also provide general skills that are valued by many employers. These skills include problem solving, critical thinking, analysis, facility with data, the ability to process quantitative information, and perhaps most important of all, the ability to learn new skills and concepts quickly

Center for Computational & Mathematical Biology

Director: Weldon Lodwick
Telephone: 303-315-1733
Website: <http://ccmb.ucdenver.edu/>

The Center for Computational Biology (CCMB) is a multidisciplinary center focused on computational and mathematical biology research and education.

Center for Computational Mathematics

Director: Jan Mandel
Telephone: 303-315-1703
Website: <http://ccm.ucdenver.edu>

The Center for Computational Mathematics is composed of faculty members who have an interest in computational mathematics, the study of solving mathematical problems with computers. The center resides in the Department of Mathematical and Statistical Sciences and includes faculty members from various other departments. The primary goal of the center is to foster research in computational mathematics and to maintain a strong educational program at all levels. It has extensive ties with industry along the Front Range and with government laboratories throughout the nation. It offers students an excellent opportunity to receive training and experience in this exciting new field. The center operates several supercomputing clusters.

Math Clinic

Website: <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/math-clinic> (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/math-clinic/>)

Each semester, the Department of Mathematical and Statistical Sciences conducts math clinics that are open to both undergraduate and graduate students. Each clinic is sponsored by a business, government agency or research organization. The clinic sponsor provides a specific project on which students work with the supervision of a faculty member and a sponsor representative. Every clinic results in a final report to the sponsor and provides participating students with an opportunity to apply mathematics to relevant problems. Recent math clinic sponsors include

Raytheon, Lockheed Martin, Xenometrix, Budget Truck Rental and United Launch Alliance.

Statistical Consulting Service

The Department of Mathematical and Statistical Sciences regularly offers a graduate course in statistical consulting in which students work on problems provided by researchers and clients at CU Denver and in the Denver metropolitan area. Potential clients should contact the department at 303-315-1700.

Graduate Program

Director: Steffen Borgwardt
Telephone: 303-315-1756

The Department of Mathematical and Statistical Sciences offers the MS degrees in Applied Mathematics and Statistics and the PhD degree in Applied Mathematics. Each of these degree programs conforms to the rules and policies of the Graduate School Policies and Procedures (p. 59).

Detailed descriptions of the requirements for the MS and PhD degrees are maintained at www.math.ucdenver.edu (<http://www.math.ucdenver.edu>). The following is an abbreviated summary of these requirements.

Financial Support

PhD students are encouraged to apply for teaching assistantships. A variety of other opportunities for financial support are also available.

Applied Statistics Certificate

Director: Joshua French
Telephone: 303-315-1709
Website: <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics> (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics/>)
 Click here (p. 366) to learn about the **requirements for the Graduate Certificate in Applied Statistics**.

Requirements for Admission

To begin graduate work toward the MS or PhD degrees in Applied Mathematics, a student should have at least the following preparation: 30 semester hours of mathematics with each course grade at B- or better and an overall GPA of 3.0 or better, at least 24 of which are upper-division courses. These courses should include a full year of advanced calculus or introduction to analysis, one semester of linear algebra and one semester of either differential equations, abstract algebra, discrete mathematics or probability.

To begin graduate work toward the MS in Statistics, a student should have at least the following preparation: a baccalaureate (not necessarily in mathematics or statistics) from an accredited college or university with a grade point average (GPA) of 3.0 or above. Students must have taken three semesters of calculus (through multivariate calculus), linear algebra, and a calculus-based statistics course that covers basic probability and statistical distributions. Admitted students are generally expected to have completed several additional upper-division mathematics courses on top of the minimum requirements, though students from non-mathematics backgrounds who meet minimum requirements and have exceptional track records will be considered on a case-by-case basis.

Students who do not have all the prerequisites may be admitted with prerequisite deficiencies with the understanding that those deficiencies must be removed after admission. Students who have a cumulative undergraduate GPA that is less than 3.0 may be eligible for provisional admission to the master's program (see also the Graduate School (p. 38) admission requirements).

Application Deadlines

Applications to the MS or PhD programs should be submitted by the following target dates to be guaranteed full consideration. International students should submit their applications at least one month prior to these target dates.

Target Dates for PhD Program	Target Dates for MS Program
January 15: fall semester	July 15: fall semester
No summer admissions for the PhD program	March 1: summer semester
No spring admissions for the PhD program	Nov 1: spring semester

Applications received after the target dates may still be considered for admission, depending on space availability.

Applied Statistics Graduate Certificate

The minimum admission requirements for students applying for the Graduate Certificate in Applied Statistics are:

- A bachelor's degree (not necessarily in mathematics or statistics) from an accredited college or university
- A grade point average (GPA) of 3.0 or above during their bachelor's degree.
- Students must have taken three semesters of calculus (through multivariate calculus), linear algebra, and a calculus-based statistics course that covers basic probability and statistical distributions.

Subject to approval by the Director of the Statistical Programs and the Graduate Committee, students with prerequisite deficiencies may be admitted with the understanding that those deficiencies must be removed after admission. Courses taken to fulfill admission deficiencies may not be counted toward the certificate.

Programs

- Applied Mathematics, MS (p. 360)
- Applied Mathematics, PhD (p. 362)
- Statistics, MS (p. 364)
- Applied Statistics Graduate Certificate (p. 366)

Faculty

Professors:

Stephen Hartke, PhD, Rutgers University
Michael S. Jacobson, PhD, Emory University
Julien Langou, PhD, INSA, Toulouse, France
Weldon A. Lodwick, PhD, Oregon State University
Jan Mandel, PhD, (equivalent), Charles University, Czechoslovakia
Florian Pfender, PhD, Emory University
Stephanie A. Santorico, PhD, North Carolina State University

Associate Professors:

Stephen Billups, PhD, University of Wisconsin-Madison
Steffen Borgwardt, PhD, Technische Universität München

Troy Butler, PhD, Colorado State University
Joshua French, PhD, Colorado State University
Audrey Hendricks, PhD, Boston University
Burton Simon, PhD, University of Michigan, Ann Arbor
Diana White, PhD, University of Nebraska

Assistant Professors:

Erin Austin, PhD, University of Minnesota
Yaning Liu, PhD, Florida State University
Emily Speakman, PhD, University of Michigan

Associate Professors, Clinical Teaching Track:

RaKissa Manzanarez, PhD, University of Northern Colorado
Adam Spiegler, PhD, University of Arizona

Senior Instructors:

Robert Rostermundt, PhD, University of Colorado Denver

Instructors:

Joe Bilello, MS, Long Island University
Lance Lana, MS, University of Colorado Denver
Dmitriy Ostrovskiy, PhD, State University of New York at Stony Brook

International College of Beijing Faculty:

Ba Nguyen, PhD, Wayne State University
Joseph Quarcio, PhD, University of South Florida

Research Faculty:

Aime Fournier, PhD, Yale University

Emeritus Faculty:

William Briggs, PhD, Harvard University
William E. Cherowitzo, PhD, Columbia University
Kathryn L. Fraughnaugh, PhD, University of Houston
Andrew Knyazev, PhD, Russian Academy of Sciences
J. Richard Lundgren, PhD, Ohio State University
Stanley E. Payne, PhD, Florida State University

Mathematics (MATH) Courses

MATH 5010 - History of Mathematics (3 Credits)
 A history of the development of mathematical techniques and ideas from early civilization to the present, including the inter-relationships of mathematics and sciences. Note: this course assumes that students have mathematical knowledge equivalent to MATH 1401. Prereq: Graduate standing. Not open to students who have had MATH 4010. No credit for applied math graduate students. Cross-listed with MATH 4010. Term offered: spring. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors
 Typically Offered: Spring.

MATH 5012 - An Advanced Perspective on Number and Operation (2 Credits)

Advanced study of number and operation, including why the various procedures from arithmetic work and connections to algebraic reasoning. Focuses on using rigorous mathematical reasoning and multiple representations to explain concepts. Note: Does not count toward graduate degrees in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4012. Max hours: 2 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5013 - An Inquiry-based Approach to Geometry (1 Credit)

An inquiry-based approach to middle-level and Euclidean geometry. Topics include: polygons and the angle relationships, constructions, Pythagorean theorem and perimeter, area and volume, similarity and congruence, circles. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4013. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5014 - Statistical Knowledge for Teaching (1 Credit)

A problem-based statistics seminar aimed at secondary teachers. Topics include: the central limit theorem, the law of large numbers, probability, measures of central tendency and variability, sampling distributions, regression, and hypothesis testing. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3800 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4014. Max hours: 1 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5015 - Capstone Course for Secondary Teachers (3 Credits)

High school mathematics from an advanced perspective: analyses of alternative definitions, extensions and generalizations of familiar theorems; discussions of historical contexts in which concepts arose; applications of mathematics. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3210, 4310 and 3140 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4015. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5016 - RM-MSMSP Research Experience for Teachers - Math Cohort (1-6 Credits)

The Research Experience for Teachers (RET) program is a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant mathematics understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the mathematics abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max hours: 6 Credits.

Grading Basis: Letter Grade

MATH 5017 - Topics in Mathematics for Teachers (0.3-50 Credits)

Topics vary from semester to semester. Designed for professional mathematics teachers. Note: This course will not count toward a degree in applied mathematics. Prereq: permission of instructor. Repeatable. Max Hours: 50 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 50.

MATH 5027 - Topics in Applied Mathematics (3 Credits)

Selected topics in mathematical problems arising from various applied fields such as mechanics, electromagnetic theory, economics and biological sciences. Prereq: Graduate standing in Applied Mathematics, Statistics, or Dual MATH MA/ECON MA, or permission of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate standing in Applied Mathematics, Statistics, or Dual MATH MA/ECON MA.

MATH 5070 - Applied Analysis (3 Credits)

Metric spaces, uniform convergence, elements of Banach spaces, elements of functions of complex variable. Problem solving and independent proof writing. Review of selected advanced topics in analysis for the PhD preliminary examination. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of two semesters of undergraduate real analysis (e.g., MATH 4310 and MATH 4320). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Spring.

MATH 5110 - Theory of Numbers (3 Credits)

Every other year. Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Prereq: Graduate Standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in mathematical proof (e.g. MATH 3000). Cross-listed with MATH 4110. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5135 - Functions of a Complex Variable (3 Credits)

Infrequent. The complex plane, infinite series and products, elementary special functions, Cauchy-Riemann equations, conformal mapping, complex integration, Cauchy integral theory, and residue theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of undergraduate-level real analysis (e.g. MATH 4310, MATH 4320) or to a semester of graduate-level real analysis (e.g., MATH 5070). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5198 - Mathematics for Bioscientists (3 Credits)

Infrequent. Develops mathematical reasoning: introduces linear algebra, discrete structures, graph theory, probability, and differential equations, using applications to molecular biology. Note: No credit for mathematics or engineering students. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of calculus (e.g., MATH 1401, MATH 2411). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5310 - Probability (3 Credits)

The course covers axioms of probability, combinatorial probability, conditional probability, random variables (discrete, continuous, and multivariate), expected value (mean, moments, variance, covariance, etc.), limit theorems (laws of large numbers, Central Limit Theorem), Poisson processes and Markov chains. Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 5320 - Statistical Inference (3 Credits)

Methods for constructing sampling distributions; sufficient, minimal sufficient, ancillary and complete statistics; methods for constructing and evaluating point estimators; estimator optimality; methods for constructing and evaluating hypothesis tests; methods for constructing and evaluating confidence interval estimators; asymptotic properties of estimators. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Typically Offered: Spring.

MATH 5337 - Intro to Statistical and Machine Learning (3 Credits)

This is an applied, hands-on course in statistical and machine learning. This course will introduce students to the general framework, best practices, model training, and assessment for machine learning methods from the viewpoint of statistics. Both supervised and unsupervised methods are covered including penalized regression, k-nearest neighbors, clustering, and neural networks. Additional machine learning topics such as random forests and support vector machines are included as time permits. Ultimately, students will learn how and why to use a particular method, how to validate and explain the results, and apply the methods to real data. Note: It is recommended that students are comfortable learning a statistical computing language such as R or Python as these will be taught alongside the course material. Students with minimal programming experience should expect to spend more time learning the programming language throughout the course. Prereq: MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763 with a C- or higher. Students who have completed a different statistics course that contains regression and computing may seek instructor permission to enroll. Cross-listed with MATH 4337. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763 with a C- or higher.

MATH 5350 - Mathematical Theory of Interest (3 Credits)

Rates of interest, term structure of interest rates, force of interest, yield rate, principal, equation of value, annuity, perpetuity, stocks, bonds, other financial instruments. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5351 - Actuarial Models (3 Credits)

Severity models, frequency models, aggregate models, risk measures, ruin theory, construction and selection of empirical models, credibility, simulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in probability and statistics (e.g. MATH 4810, MATH 4820, MATH 3382). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5387 - Applied Regression Analysis (3 Credits)

Topics include simple and multiple linear regression, model diagnostics and remediation, and model selection. Emphasis is on practical aspects and applications of linear models to the analysis of data in business, engineering and behavioral, biological and physical sciences. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in statistics (e.g., MATH 4820). No co-credit with MATH 4830/5830. Cross-listed with MATH 4387. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Typically Offered: Fall.

MATH 5388 - Machine Learning Methods (3 Credits)

Regression, neural networks, clustering, support vector machines, random forests, and other prediction/classification techniques will be used to solve supervised and unsupervised learning problems. This course will connect each topic with the underlying mathematical foundation such as optimization methods and statistical inference. A key focus is deriving the methods and their properties to guide proper application. Students will learn how to apply methods using standard libraries from Python, R, or Matlab. Prereq: Graduate standing in Applied Mathematics or Statistics or in one of the 4+1 BS-MS programs. Cross-listed with MATH 4388. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics or in one of the 4+1 BS-MS programs. (AMEN-MS, AMEN-PHD, STAT-MS, MATH BS-BMA).

MATH 5390 - Game Theory (3 Credits)

Zero-sum and non-zero-sum games; Nash equilibrium and the principle of indifference; Shapley value and other concepts of fair division; Evolutionary game theory, ESS, and evolutionary population dynamics. Applications in economics, business, and biology. Note: this course assumes that students have the equivalent of MATH 2421, 3191 and 3800 or 4810. Prereq: Graduate standing in Applied Mathematics. Cross-listed with MATH 4390. Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5394 - Experimental Designs (3 Credits)

Designs covered will include: completely randomized, complete block, split plot, incomplete block, factorial and fractional factorial designs. Additionally, power and study design for non-experimental studies will be covered. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in regression analysis (e.g., MATH 4387). Cross-listed with MATH 4394. Term offered: spring of even years. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 5410 - Modern Cryptology (3 Credits)

Every other year. Deals with the mathematics that underlies modern cryptology. Topics include: classical cryptology, public and private key cryptosystems, secret sharing schemes, authentication schemes, linear feedback shift registers, discrete logarithm and elliptic curve-based schemes. Note: this course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Prereq: Graduate standing in Applied Mathematics. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5432 - Computational Graph Theory (3 Credits)

Infrequent. Algorithmic techniques in graph theory and other discrete mathematics areas. Typical topics include: branch-bound algorithms, matching, colorings, domination, min-plus algebra, simulated annealing and related heuristics, NP-completeness theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in graph theory (e.g., MATH 4408). Max Hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5446 - Theory of Automata (3 Credits)

Infrequent. Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in abstract algebra (e.g., MATH 4140). Cross-listed with CSCI 5446. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5490 - Network Flows (3 Credits)

Every other year. Begins with the classical min-cost flow problem, defined on an ordinary network. Other problems, such as shortest path, are also shown in this class. Both theory and algorithms are presented. Extensions include generalized networks, nonlinear costs, fixed charges, multi-commodity flows and additional applications, such as in communications networks. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: spring of even years. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5576 - Mathematical Foundations of Artificial Intelligence I (3 Credits)

Infrequent. A fundamentals course that complements other approaches, such as in engineering, psychology, and business administration. Here the emphasis is on the mathematical foundations. Topics include logical inference, problem solving, heuristic search, neural nets, analogical reasoning and learning. Models and paradigms also consider different measures of uncertainty. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in data structures (e.g., CSCI 2511) and a course in linear algebra (e.g., MATH 3191). Cross-listed with MATH 4576. Max Hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5593 - Linear Programming (3 Credits)

A linear program is an optimization problem that seeks to minimize or maximize a linear function subject to a system of linear inequalities and equations. This course begins with examples of linear programs and variations in their representations. Basic theoretical foundations covered include polyhedra, convexity, linear inequalities and duality. Two classes of solution algorithms are given: simplex methods and interior point methods. The primary emphasis of this course is on mathematical foundations, and applications are used to illustrate the main results. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics
Typically Offered: Fall.

MATH 5610 - Computational Biology (3 Credits)

Every other year. Basic introduction and mathematical foundations. Topics include comparative genomics; proteomics; phylogeny; dynamic programming and sequence alignment; gene expression arrays and clustering; Bayesian networks; structure prediction and hidden Markov models. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have some programming experience or the equivalent of a programming course (e.g., CSCI 1410) and linear algebra (e.g., MATH 3191 or 3195). Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5660 - Numerical Analysis I (3 Credits)

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411) and linear algebra (e.g., MATH 3191 or 3195). Programming experience is strongly recommended. Cross-listed with CSCI 4650, 5660, and MATH 4650. Term offered: fall. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 5661 - Numerical Analysis II (3 Credits)

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of linear algebra and differential equations (e.g., MATH 3195 or both MATH 3191 and 3200) and programming experience or a first course on numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4660, CSCI 4660 and 5661. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Spring.

MATH 5674 - Parallel Computing and Architectures (3 Credits)

Infrequent. Examines a range of topics involved in using parallel operations to improve computational performance. Parallel architectures, parallel algorithms, parallel programming languages, interconnection networks, and their relation to specific computer architectures. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4674. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5718 - Applied Linear Algebra (3 Credits)

Topics include: Vector spaces, practical solution of systems of equations, projections, eigenvalues and eigenvectors, unitary transformations, Schur QR, singular value decompositions, similarity transformations, Jordan forms, and positive definite matrices. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Fall.

MATH 5733 - Partial Differential Equations (3 Credits)

Infrequent. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate sequence in calculus (e.g., through MATH 2421) and differential equations (e.g., MATH 3200 or 3195). Cross-listed with MATH 4733. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5779 - Math Clinic (3 Credits)

The clinic is intended to illustrate the applicability and utility of mathematical concepts. Research problems investigated originate from a variety of sources—industry, government agencies, educational institutions, or nonprofit organizations. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Cross-listed with MATH 4779. Term offered: fall, spring. Repeatable. Max Hours: 99 Credits. Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 5791 - Continuous Modeling (3 Credits)

Every other year. Surveys mathematical problems that arise in natural sciences and engineering. Topics may include population models, epidemic models, mechanics, heat transfer and diffusion, tomography, pharmaco-kinetics, traffic flow, fractal models, wave phenomena, and natural resource management. Most models discussed are based on differential and integral equations. Emphasis is formulation and validation of models as well as methods of solution. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in differential equations and linear algebra (e.g., MATH 3200 and 3191). Cross-listed with MATH 4791. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5792 - Probabilistic Modeling (3 Credits)

Every other year. Markov chains; Poisson processes, continuous time Markov chains, elementary topics in queuing theory, and some mathematical aspects of Monte Carlo simulation, including random variate generation, variance reduction, and output analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810) and some programming experience. Cross-listed with MATH 4792. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5793 - Discrete Math Modeling (3 Credits)

Every other year. Focuses on the use of graph theory and combinatorics to solve problems in a wide variety of disciplines. Applications are selected from computer science, communication networks, economics, operations research, and the social, biological and environmental sciences. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in linear algebra (e.g., MATH 3191) and graph theory (e.g., MATH 4408). Cross-listed with MATH 4793. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5794 - Optimization Modeling (3 Credits)

Every other year. Principles of model formulation and analysis are developed by presenting a wide variety of applications, both for natural phenomena and social systems. Examples of optimization models to represent natural phenomena include principles of least time and energy. Examples in social systems include resource allocation, environmental control and land management. Specific applications vary, but are chosen to cover a wide scope that considers dichotomies, such as discrete vs. continuous, static vs. dynamic, and deterministic vs. stochastic. Some computer modeling language (like GAMS) is taught. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. : This course assumes that students have the equivalent of a sequence in calculus (e.g., through MATH 2421) and linear algebra (e.g., MATH 3191). Cross-listed with MATH 4794. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5830 - Applied Statistics (3 Credits)

Review of estimation, confidence intervals and hypothesis testing; ANOVA; categorical data analysis; non-parametric tests; linear and logistic regression. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: This course assumes that students have the equivalent of an introductory course in statistics (e.g., MATH 2830). No co-credit with MATH 4387 or 5387 and doesn't count for Math degrees. Cross-listed with MATH 4830. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

MATH 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: Graduate standing in Applied Mathematics

MATH 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

MATH 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: Graduate standing in Applied Mathematics

MATH 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments, and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max hours: 8 Credits. No co-credit with MATH 5960 or MATH 6960.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Additional Information: Report as Full Time.

MATH 5960 - Master's Project (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments, and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. No cocredit with MATH 5950 or MATH 6960.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Additional Information: Report as Full Time.

MATH 6023 - Topics in Discrete Math (3 Credits)

Topics may include graph theory, combinatorics, matroid theory, combinatorial matrix theory, finite geometry, design theory, and discrete algorithms. Note: Since topic varies by semester, students may register for this course more than once. Note: students should obtain permission from the instructor prior to enrolling in this course. Prereq: Graduate standing in Applied Mathematics. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 6101 - Uncertainty Quantification (3 Credits)

The field of uncertainty quantification is evolving rapidly due to increasing emphasis on models of physical and biological systems that have quantified uncertainties for large-scale applications, novel algorithm development, and new computational architectures that facilitate implementation of these algorithms. In this course, we develop the basic concepts, theory, and algorithms necessary to quantify input and response uncertainties for a variety of simulation models. The topics will include concepts from probability and statistics, parameter selection techniques, frequentist and Bayesian model calibration, propagation of uncertainties, quantification of model discrepancy, surrogate model construction, and local and global sensitivity analysis.

Note: A basic knowledge of probability, linear algebra, ordinary and partial differential equations, and introductory numerical analysis techniques is assumed. Coursework will typically consist of projects. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation MATH 5070, MATH 5718, MATH 5660, MATH 5733. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6131 - Real Analysis (3 Credits)

Every other year. Lebesgue measure and integration, general measure and integration theory, Radon-Nikodym Theorem, Fubini Theorem.

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6330 - Workshop in Statistical Consulting (3 Credits)

Students participate as consultants in a drop-in consulting service operated by the department. Seminars provide students with supervised experience in short term statistical consulting. Note: Since problems vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6360 - Exploratory Data Analysis (3 Credits)

Every other year. Philosophy and techniques associated with exploratory (vs. confirmatory) data analysis, both as originally presented (John Tukey) and current computer-based implementations. Graphical displays, robust-resistant methods (lines, two-way fits), diagnostic plots, standardization. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6376 - Statistical Computing (3 Credits)

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 7376. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6380 - Stochastic Processes (3 Credits)

Every other year. Markov processes in discrete and continuous time, renewal theory, martingales, Brownian motion, branching processes, and stationary processes. Applications include queuing theory, performance evaluation of computer and communication systems and finance. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200), along with undergraduate-level coursework in probability (e.g. MATH 4810). Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6384 - Spatial Data Analysis (3 Credits)

This course will cover various statistical methods for spatial data. This will include assessing cluster identification for point process and regional data, as well as quantifying spatial dependence and making predictions for regional and geostatistical spatial data. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6388 - Statistical and Machine Learning (3 Credits)

This course covers a variety of statistical and machine learning methods. Both supervised and unsupervised methods are covered with an emphasis on model training and error estimation. Topics include penalized regression, principal components, k-nearest neighbors, clustering, and neural networks. Additional higher-level topics such as random forests, support vector machines, and boosting are also covered as time permits. Students will gain exposure to high performance computing by working on a Linux cluster. Prereq: Graduate standing in Statistics or Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6395 - Multivariate Methods (3 Credits)

Every other year. Multivariate distributions, hypothesis testing and estimation. Multivariate analysis of variance, discriminant analysis, multidimensional scaling, factor analysis, principal components. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6398 - Calculus of Variations and Optimal Control (3 Credits)

Infrequent. Standard variational problems (geodesic, time-of-transit, isoperimetric, surface, area), Euler-Lagrange equations, variational principles in mechanics, optimal control problems, necessary conditions for optimality, Pontryagin principle. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6404 - Applied Graph Theory (3 Credits)

Every other year. Emphasis on graph theory. Topics will include trees, digraphs and networks, intersection graphs, coloring, clique coverings, distance, paths and cycles. Topics are motivated by applications.

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6595 - Nonlinear Programming (3 Credits)

Every other year. Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate direction methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis (e.g. MATH 4310 and 4320) and graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6653 - Introduction to Finite Element Methods (3 Credits)

Every other year. The Finite Element Method (FEM) is introduced as a generic tool for the approximation of partial differential equations that model engineering and physics problems of interest. Elliptic, hyperbolic, and parabolic equations are solved with FEM. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6735 - Continuum Mechanics (3 Credits)

Every other year. Indicinal notation. Eulerian and Lagrangian coordinates. Deformation, strain, strain rate, stress. Conservation of mass, momentum, and energy. Exploitation of entropy production inequality to obtain constitutive equations for elastic, viscous, visco elastic, plastic, or porous materials. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: Graduate standing in Applied Mathematics

MATH 6960 - Research Methods in Mathematics and Statistics (3 Credits)

The goal of the course is to guide students through the process of performing rigorous mathematical and statistical research. Topics include performing a proper literature review, developing technical writing skills, and learning best practices regarding oral presentations. Students will discuss their ongoing research projects in groups and individually with the instructor, write a research paper, and present their results in a classroom seminar. Master's students should be entering their final year of coursework. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permissions. No co-credit with MATH 5950, MATH 5960, or ECON 6073. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7101 - Topology (3 Credits)

Every other year. Topological spaces, compactness, separation properties and connectedness. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester undergraduate sequence in analysis or advanced calculus (e.g. MATH 4310 and 4320) or a graduate-level course in analysis (e.g. MATH 5070). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7132 - Functional Analysis (3 Credits)

Every other year. Linear metric and topological spaces, duality, weak topology, spaces of functions, linear operators, compact operators, elements of spectral theory, and operator calculus. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate level coursework in real analysis (e.g. MATH 6131). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7376 - Statistical Computing (3 Credits)

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 6376. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Cross-listed with MATH 6376. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7381 - Mathematical Statistics I (3 Credits)

Every other year. Mathematical theory of statistics. Parametric inference: discrete and continuous distributions, methods of parameter estimation, confidence intervals. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and statistics (MATH 5320). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7382 - Mathematical Statistics II (3 Credits)

Every other year. (Continuation of MATH 7381.) Hypothesis testing, robust estimation, tolerance intervals, nonparametric inference, sequential methods. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of advanced graduate level coursework in mathematical statistics (e.g. MATH 7381). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7384 - Mathematical Probability (3 Credits)

Every other year. Measurable spaces, probability measures, random variables, conditional expectations and martingales. Convergence in probability, almost sure convergence, convergence in distribution, limit theorems (law of large numbers, central limit theorem, laws of iterated logarithm). Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in probability (e.g. MATH 4810) and graduate-level coursework in analysis (e.g. MATH 5070 or 6131). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7385 - Stochastic Differential Equations (3 Credits)

Brownian motion, Ito integral, Ito formula, Dynkin's formula, stochastic optimal control, boundary value problems, Girsanov theorem, mathematical finance, optimal stopping. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in mathematical probability (e.g. MATH 7384). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7386 - Monte Carlo Methods (3 Credits)

This course introduces Monte Carlo integration, variance reduction methods, quasi-Monte Carlo, Markov chain Monte Carlo, Metropolis-Hastings algorithm, Gibbs sampler, simulated annealing, expectation-maximization algorithm, sequential Monte Carlo methods. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation: MATH 5310 and MATH 5320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7393 - Bayesian Statistics (3 Credits)

Prior and posterior distributions, conjugate models, single and multiparameter models, hierarchical models, numerical methods for evaluating posteriors, Monte Carlo methods, and Markov chain Monte Carlo. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Programming experience is strongly recommended. Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7397 - Nonparametric Statistics (3 Credits)

Every three years. Statistical inference without strong model assumptions. Hypothesis testing and estimation using permutations and ranks, analysis of variance, and nonparametric model fitting. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7405 - Advanced Graph Theory (3 Credits)

Continuation of MATH 6404. Topics to be covered include: trees and optimization, encoding and embedding of graphs, generalized colorings and applications, perfect graphs, extremal problems, substructures, connectedness and cycles. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in graph theory (e.g. MATH 6404). Term offered: spring of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7409 - Applied Combinatorics (3 Credits)

Every other year. Emphasis is on enumerative combinatorics. Topics include multinomial coefficients, generating functions, SDRs, Polya's enumeration theory, pigeon-hole principle, inclusion/exclusion and Moebius inversion of finite posets. Topics may also include introduction to designs and finite geometry. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7410 - Combinatorial Structures (3 Credits)

Every other year. Finite combinatorial structures; existence, construction and applications. Topics include Latin squares, Hadamard matrices, block designs, finite geometries and extremal and non-constructive combinatorics. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in combinatorics (e.g. MATH 7409). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7413 - Modern Algebra I (3 Credits)

Every other year. Groups, rings and ideals, integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate level coursework in abstract algebra (e.g. MATH 4140). It is recommended that students take MATH 5718 during the same semester as MATH 7413. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7414 - Modern Algebra II (3 Credits)

Every other year. Field theory, Galois theory, Modules over rings, especially over integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and abstract algebra (e.g. MATH 7413). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7419 - Mathematical Coding Theory (3 Credits)

Error correcting codes are used to recapture information that has been distorted in some transmission process. Various coding schemes use block codes obtained from algebraic, geometric and combinatorial structures. Topics include: fundamentals, linear, Reed-Muller, Golay, cyclic and BCH codes. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7421 - Projective Geometry (3 Credits)

Every other year. Synthetic and algebraic development of projective spaces. Collineation groups, representation theorems, quadratic sets and applications. Emphasis is on finite projective spaces. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and combinatorics (e.g. MATH 7409). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7593 - Advanced Linear Programming (3 Credits)

Every three years. A Ph.D. level course that goes deeper into linear programming, starting from where a graduate-level course (5593) ends. Topics include advanced sensitivity analysis, sparse matrix techniques, and special structures. Additional topics, which vary, include deeper analysis of algorithms, principles of model formulation and solution analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7594 - Integer Programming (3 Credits)

Every three years. A Ph.D. level course that uses linear programming (5593), especially polyhedral theory, to introduce concepts of valid inequalities and superadditivity. Early group-theoretic methods by Gomory and Chvatal's rounding function are put into modern context, including their role in algorithm design and analysis. Duality theory and relaxation methods are presented for general foundation and analyzed for particular problem classes. Among the special problems considered are knapsack, covering, partitioning, packing, fix-charge, traveling salesman, generalized assignment matchings. Matroids are introduced and some greedy algorithms are analyzed. Additional topics, which vary, include representability theory, heuristic search and complexity analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7595 - Advanced Nonlinear Programming (3 Credits)

Every three years. Focuses primarily on the fundamental theory of nonlinear programming. Topics include convex analysis, optimality criteria, Lagrangian and conjugate duality, stability and sensitivity analysis. Other topics vary depending on the research interests of the instructor. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework addressing computational methods in nonlinear programming (e.g. MATH 6595). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7663 - Finite Difference Methods for Partial Differential Equations (3 Credits)

Every other year. Consistency, stability, and convergence for difference schemes. Derivations based on Taylor series and finite series. Methods for parabolic and hyperbolic initial value problems and initial-boundary-value problems, elliptic boundary-value problems, some nonlinear problems. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5070) and partial differential equations (e.g. MATH 5733). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7665 - Numerical Linear Algebra (3 Credits)

Every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7667 - Introduction to Approximation Theory (3 Credits)

Every other year. Linear normed and Banach spaces, convexity, existence and uniqueness of best approximations, least square approximation and orthogonal polynomials, Chebyshev approximation by polynomials and other related families, splines. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in analysis (e.g. MATH 5070) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7821 - Topics in Projective Geometry (3 Credits)

Infrequent. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in projective geometry (e.g. MATH 7821). Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7822 - Topics in Linear Algebra (3 Credits)

Infrequent. Topics may include canonical forms, bilinear and quadratic forms, and combinatorial matrix theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7823 - Topics in Discrete Math (3 Credits)

Infrequent. Advanced topics in discrete mathematics; will change from semester to semester. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7824 - Topics in Computational Mathematics (3 Credits)

Infrequent. Topics include methods for differential equations, numerical optimization, approximation theory, inverse problems, and Fourier analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7825 - Topics in Optimization (3 Credits)

Infrequent. Some topics are extensions of those introduced in MATH 6595, while other topics are new. Examples of topics are: duality, stability, sensitivity, consistency, redundancy, principles of optimality, control theory, calculus of various global (non-convex) optimization and model reformulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7826 - Topics in Probability and Statistics (3 Credits)

Infrequent. Topics may include generalized linear models, information theory, robust methods, spatial statistics, sequential analysis, Monte Carlo methods, queueing theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7827 - Topics in Applied Mathematics (3 Credits)

Infrequent. Topics include problems in differential equations, optimization, mathematical modeling, Fourier analysis and approximation theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: Graduate standing in Applied Mathematics

MATH 7921 - Readings in Mathematics (1 Credit)

Annual. Seven readings courses are offered regularly primarily for Ph.D. students at the research level in the designated fields. The seminar format requires significant student participation. Prereq: permission of instructor. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7922 - Rdgs:Math Fndts-Cmptr Sc (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7923 - Readings: Discrete Mathematics (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7924 - Rdgs:Comp Mathematics (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7925 - Readings: Optimization (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7926 - Rdgs:Applied Prob/Stats (1 Credit)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 7927 - Rdgs:Comp/Math Biology (1 Credit)

Max hours: 1 Credits.

Grading Basis: Letter Grade

MATH 8660 - Mathematical Foundations of Finite Element Methods (3 Credits)

Every other year. Theoretical foundations of finite element methods for elliptic boundary value problems, Sobolev spaces, interpolations of Sobolev spaces, variational formulation of elliptic boundary-value problems, basic error, estimates, applications to elasticity, practical aspects of finite element methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in finite element methods (e.g. MATH 6653) or equivalent programming experience, and graduate-level coursework in analysis or functional analysis (e.g. MATH 6131 or MATH 7132). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 8664 - Iterative Methods in Numerical Linear Algebra (3 Credits)
Every other year. Preconditioned iterative methods for linear systems and eigen problems, conjugate gradients, multigrid and domain decomposition. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and numerical linear algebra (e.g. MATH 7665). Max Hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Graduate standing in Applied Mathematics

MATH 8990 - Doctoral Dissertation (1-10 Credits)
Only for students working on their Ph.D. research. Repeatable. Max hours: 50 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 50.
Additional Information: Report as Full Time.

Applied Mathematics, MS

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here (p. 347) to see Mathematical and Statistical Sciences department information.

Introduction

Our MS in Applied Mathematics program offers a general degree in applied mathematics along with specialization opportunities in many areas including:

- Applied probability
- Applied statistics
- Discrete mathematics
- Mathematics of engineering and science
- Numerical analysis
- Operations research

Students in all areas are exposed to a variety of coursework and have the opportunity to participate in real-world research and consulting through our innovative Math Clinic and Statistical Consulting. Whatever specialization students choose, graduates with an applied mathematics degree will be prepared for a multitude of careers.

See our degree requirements section for further information about our concentration areas.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

A student may devote from up to 6 hours (of the 30 required hours) to the writing of a thesis. Following completion of course work, all candidates must make a one-hour oral presentation of a project or a thesis before a committee consisting of three graduate faculty members.

1. Students must complete a minimum of 30 MATH credit hours.
2. Students must complete a minimum of 27 graduate (5000-level or higher) credit hours.
3. Students must earn a minimum grade of B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. The remaining 6 hours must be either mathematics courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.
2. Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in applied mathematics.
3. The following MATH courses will **not** count toward a graduate degree: MCKE 5000 Algebraic Patterns and Functions I-MCKE 5009 Math Modeling—Using and Applying Math, MATH 5010 History of Mathematics, MATH 5012 An Advanced Perspective on Number and Operation-MATH 5015 Capstone Course for Secondary Teachers, MATH 5017 Topics in Mathematics for Teachers, MATH 5198 Mathematics for Bioscientists, and MATH 5830 Applied Statistics.

Required Courses

Code	Title	Hours
Take the following		6
Analysis Core Requirement		
MATH 5070	Applied Analysis	3
or MATH 6131 Real Analysis		
Linear Algebra Core Requirement		
MATH 5718	Applied Linear Algebra	3

The following course requirements must be satisfied by all students in the MS in Applied Mathematics Program.

Electives

Code	Title	Hours
Take at least 24 additional graduate level semester hours of MATH coursework. ¹		24
A student must either satisfy the course requirements for the MS degree without a concentration area or satisfy the requirements in one of the concentration areas listed below. Unless noted elsewhere, one course cannot be used to fulfill two requirements. Substitutions or changes to the requirements may be made with the written approval of a student's academic advisor and the Graduate Committee.		

A student may devote from 4 to 6 hours (of the 30 required hours) to the writing of a thesis. Following completion of course work, all candidates must make a one-hour oral presentation of a project or a thesis before a committee consisting of three graduate faculty members.

¹ The following MATH courses will **not** count toward a graduate degree: MCKE 5000 Algebraic Patterns and Functions I-MCKE 5009 Math Modeling--Using and Applying Math, MATH 5010 History of Mathematics, MATH 5012 An Advanced Perspective on Number and Operation-MATH 5015 Capstone Course for Secondary Teachers, MATH 5017 Topics in Mathematics for Teachers, MATH 5198 Mathematics for Bioscientists, and MATH 5830 Applied Statistics.

MS Degree without a Concentration Area

Note that MATH 6131 Real Analysis can be used to satisfy both the analysis core requirement and may also count as one of the three courses satisfying this requirement.

Code	Title	Hours
<i>Students must complete at least three of the following courses:</i>		9
MATH 5135	Functions of a Complex Variable	3
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5490	Network Flows	3
MATH 5593	Linear Programming	3
MATH 6023	Topics in Discrete Math	3
MATH 6101	Uncertainty Quantification	3
MATH 6131	Real Analysis	3
MATH 6330	Workshop in Statistical Consulting	3
MATH 6360	Exploratory Data Analysis	3
MATH 6376	Statistical Computing	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 6395	Multivariate Methods	3
MATH 6398	Calculus of Variations and Optimal Control	3
MATH 6404	Applied Graph Theory	3
MATH 6595	Nonlinear Programming	3
MATH 6653	Introduction to Finite Element Methods	3
MATH 6735	Continuum Mechanics	3
MATH 6960	Research Methods in Mathematics and Statistics	3

Additional course options may be added later at the discretion of the Department of Mathematical and Statistical Sciences, e.g., as new courses are introduced to the graduate program.

Applied Statistics Concentration

Code	Title	Hours
<i>Take all of the following courses:</i>		15
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5387	Applied Regression Analysis	3
MATH 6330	Workshop in Statistical Consulting	3
<i>And, take one of the following courses:</i>		3

MATH 5394	Experimental Designs	3
MATH 5792	Probabilistic Modeling	3
MATH 6101	Uncertainty Quantification	3
MATH 6376	Statistical Computing	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 7384	Mathematical Probability	3
MATH 7386	Monte Carlo Methods	3
MATH 7393	Bayesian Statistics	3
MATH 7826	Topics in Probability and Statistics	3

Any additional course given prior approval by the student's advisor and the Director of the Program in Statistics.

Applied Probability Concentration

Code	Title	Hours
<i>Take all of the following courses:</i>		12
MATH 5310	Probability	3
MATH 5792	Probabilistic Modeling	3
MATH 6380	Stochastic Processes	3
<i>And, take one of the following courses:</i>		3
MATH 6101	Uncertainty Quantification	3
MATH 6131	Real Analysis	3
MATH 7386	Monte Carlo Methods	3

Discrete Mathematics Concentration

Code	Title	Hours
<i>Four of the following courses:</i>		12
MATH 5490	Network Flows	3
MATH 5793	Discrete Math Modeling	3
MATH 6404	Applied Graph Theory	3
MATH 7405	Advanced Graph Theory	3
MATH 7409	Applied Combinatorics	3
MATH 7410	Combinatorial Structures	3
MATH 7413	Modern Algebra I	3
MATH 7821	Topics in Projective Geometry	3
MATH 7823	Topics in Discrete Math	3

Mathematics of Engineering and Science Concentration

Code	Title	Hours
<i>Three of the following courses:</i>		9
MATH 5387	Applied Regression Analysis	3
MATH 5779	Math Clinic	3
MATH 5791	Continuous Modeling	3
MATH 5792	Probabilistic Modeling	3
MATH 5793	Discrete Math Modeling	3
MATH 5794	Optimization Modeling	3
MATH 6735	Continuum Mechanics	3
<i>And, take two of the following courses:</i>		6
MATH 5660	Numerical Analysis I	3
MATH 5661	Numerical Analysis II	3
MATH 5733	Partial Differential Equations	3
MATH 6101	Uncertainty Quantification	3

MATH 6653	Introduction to Finite Element Methods	3
MATH 7386	Monte Carlo Methods	3
MATH 7665	Numerical Linear Algebra	3

Numerical Analysis Concentration

Code	Title	Hours
<i>Take all of the following courses:</i>		6
MATH 5660	Numerical Analysis I	3
MATH 5661	Numerical Analysis II	3
<i>And, take three of the following courses:</i>		9
MATH 5593	Linear Programming	3
MATH 5733	Partial Differential Equations	3
MATH 6101	Uncertainty Quantification	3
MATH 6595	Nonlinear Programming	3
MATH 7386	Monte Carlo Methods	3
MATH 7665	Numerical Linear Algebra	3
MATH 8660	Mathematical Foundations of Finite Element Methods	3

Operations Research Concentration

Code	Title	Hours
<i>Take all of the following courses:</i>		6
MATH 5593	Linear Programming	3
MATH 5792	Probabilistic Modeling	3
or MATH 6380 Stochastic Processes		
<i>And, take two of the following courses:</i>		6
MATH 5390	Game Theory	3
MATH 5490	Network Flows	3
MATH 5779	Math Clinic (with approval)	3
MATH 5794	Optimization Modeling	3
MATH 6595	Nonlinear Programming	3
MATH 7593	Advanced Linear Programming	3
MATH 7594	Integer Programming	3
MATH 7595	Advanced Nonlinear Programming	3
MATH 7825	Topics in Optimization	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/ms-applied-mathematics-program-goals-objectives/>).

Applied Mathematics, PhD

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) to see Mathematical and Statistical Sciences department information.

Introduction

The Department of Mathematical and Statistical Sciences offers a PhD in Applied Mathematics. The degree is designed to give candidates a contemporary, comprehensive education in applied mathematics and to provide research opportunities in the special fields of computational mathematics, discrete mathematics, mathematics of science and engineering, operations research, optimization, probability, and statistics.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete a minimum of 72 approved credit hours.
2. Students must complete all credits at the graduate 6000-level and above.
3. Students must earn a minimum grade of B (3.0) or better in all core courses, a B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete 42 credit hours with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. There are six phases of the PhD program. A candidate must fulfill course requirements, pass the preliminary examinations, establish a PhD committee, meet the academic residency requirement, pass the comprehensive examination and write and defend a dissertation.
2. The following MATH courses will NOT count toward a graduate degree: MATH 5000-5009, 5010, 5012-5015, 5017, 5198, 5250 and 5830.
3. Students must complete 42 semester hours of non-thesis course work at the graduate level (up to 30 hours of this course work may be transferred in, including courses taken as part of a master's degree). In addition, 30 hours of dissertation credit must be taken. Three readings courses (1 semester hour each) are required as part of the formal course work. Students must also satisfy a **breadth requirement** by completing a total of six graduate math courses from among several areas of mathematics, with no more than three of these courses from any one area.
4. The preliminary examinations are designed to determine that students who intend to pursue the PhD program are qualified to do so. These four-hour written examinations are in the areas of applied analysis and applied linear algebra. Students must pass these exams by the start of their fourth semester.
5. Six semesters of full-time scholarly work are required, as specified in the rules of the Graduate School (p. 59). All students are strongly advised to spend at least one year doing full-time course work or research with no outside employment.
6. The comprehensive examination is taken after completion of the preliminary exams, completion of at least three semesters of residency, and upon completion of essentially all non-thesis coursework. The exam is designed to determine mastery of graduate-level mathematics and the ability to embark on dissertation research. It consists of a six-hour written examination and an oral follow-up examination. Students must pass the comprehensive exam by the beginning of the 4th year. Within six months after passing the comprehensive examination, the candidate must present a dissertation proposal to their dissertation committee.
7. Each student must write and defend a dissertation containing original contributions and evidence of significant scholarship. The

dissertation defense is public and must be given before an examining committee approved by the Graduate School.

For more detailed information about the Applied Mathematics PhD, see department website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/phd-applied-mathematics/>).

Required Courses

Code	Title	Hours
<i>Take the following</i>		3
MATH 5779	Math Clinic	3

Code	Title	Hours
<i>Take a minimum of three readings courses.</i>		3
MATH 7921	Readings in Mathematics	1
MATH 7922	Rdgs:Math Fndts-Cmptr Sc	1
MATH 7923	Readings: Discrete Mathematics	1
MATH 7924	Rdgs:Comp Mathematics	1
MATH 7925	Readings: Optimization	1
MATH 7926	Rdgs:Applied Prob/Stats	1
MATH 7927	Rdgs:Comp/Math Biology	1

Breadth Requirement

Code	Title	Hours
<i>Students must also satisfy a breadth requirement by completing a total of six graduate math courses from among several areas of mathematics, with no more than three of these courses from any one area.</i>		18

Computational Mathematics

Code	Title	Hours
MATH 5660	Numerical Analysis I	3
MATH 5661	Numerical Analysis II	3
MATH 5791	Continuous Modeling	3
MATH 6735	Continuum Mechanics	3

Discrete Mathematics

Code	Title	Hours
MATH 5110	Theory of Numbers	3
MATH 5793	Discrete Math Modeling	3
MATH 6023	Topics in Discrete Math	3

Operations Research (including Probability)

Code	Title	Hours
MATH 5310	Probability	3
MATH 5390	Game Theory	3
MATH 5490	Network Flows	3
MATH 5593	Linear Programming	3
MATH 5792	Probabilistic Modeling	3
MATH 5794	Optimization Modeling	3
MATH 6380	Stochastic Processes	3
MATH 7593	Advanced Linear Programming	3
MATH 7594	Integer Programming	3
MATH 7595	Advanced Nonlinear Programming	3

Statistics

Code	Title	Hours
MATH 5320	Statistical Inference	3
MATH 5387	Applied Regression Analysis	3
MATH 5394	Experimental Designs	3
MATH 6330	Workshop in Statistical Consulting	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 7381	Mathematical Statistics I	3
MATH 7382	Mathematical Statistics II	3
MATH 7393	Bayesian Statistics	3
MATH 7397	Nonparametric Statistics	3

General

Code	Title	Hours
MATH 5135	Functions of a Complex Variable	3
MATH 5733	Partial Differential Equations	3
MATH 6131	Real Analysis	3
MATH 7132	Functional Analysis	3

Additional Electives

Code	Title	Hours
<i>Complete an additional 18 credit hours of graduate level coursework, in consultation with the program director.</i>		18
MATH 5027	Topics in Applied Mathematics	3
MATH 5070	Applied Analysis	3
MATH 5110	Theory of Numbers	3
MATH 5135	Functions of a Complex Variable	3
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5337	Intro to Statistical and Machine Learning	3
MATH 5350	Mathematical Theory of Interest	3
MATH 5351	Actuarial Models	3
MATH 5387	Applied Regression Analysis	3
MATH 5388	Machine Learning Methods	3
MATH 5390	Game Theory	3
MATH 5394	Experimental Designs	3
MATH 5410	Modern Cryptology	3
MATH 5432	Computational Graph Theory	3
MATH 5446	Theory of Automata	3
MATH 5490	Network Flows	3
MATH 5576	Mathematical Foundations of Artificial Intelligence I	3
MATH 5593	Linear Programming	3
MATH 5610	Computational Biology	3
MATH 5660	Numerical Analysis I	3
MATH 5661	Numerical Analysis II	3
MATH 5674	Parallel Computing and Architectures	3
MATH 5718	Applied Linear Algebra	3
MATH 5733	Partial Differential Equations	3
MATH 5791	Continuous Modeling	3
MATH 5792	Probabilistic Modeling	3

MATH 5793	Discrete Math Modeling	3
MATH 5794	Optimization Modeling	3
MATH 5840	Independent Study	1-3
MATH 5880	Directed Research	1-6
MATH 5939	Internship	1-6
MATH 5950	Master's Thesis	1-8
MATH 5960	Master's Project	1-8
MATH 6023	Topics in Discrete Math	3
MATH 6101	Uncertainty Quantification	3
MATH 6131	Real Analysis	3
MATH 6330	Workshop in Statistical Consulting	3
MATH 6360	Exploratory Data Analysis	3
MATH 6376	Statistical Computing	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 6395	Multivariate Methods	3
MATH 6398	Calculus of Variations and Optimal Control	3
MATH 6404	Applied Graph Theory	3
MATH 6595	Nonlinear Programming	3
MATH 6653	Introduction to Finite Element Methods	3
MATH 6735	Continuum Mechanics	3
MATH 6840	Independent Study	1-3
MATH 6960	Research Methods in Mathematics and Statistics	3
MATH 7101	Topology	3
MATH 7132	Functional Analysis	3
MATH 7376	Statistical Computing	3
MATH 7381	Mathematical Statistics I	3
MATH 7382	Mathematical Statistics II	3
MATH 7384	Mathematical Probability	3
MATH 7385	Stochastic Differential Equations	3
MATH 7386	Monte Carlo Methods	3
MATH 7393	Bayesian Statistics	3
MATH 7397	Nonparametric Statistics	3
MATH 7405	Advanced Graph Theory	3
MATH 7409	Applied Combinatorics	3
MATH 7410	Combinatorial Structures	3
MATH 7413	Modern Algebra I	3
MATH 7414	Modern Algebra II	3
MATH 7419	Mathematical Coding Theory	3
MATH 7421	Projective Geometry	3
MATH 7593	Advanced Linear Programming	3
MATH 7594	Integer Programming	3
MATH 7595	Advanced Nonlinear Programming	3
MATH 7663	Finite Difference Methods for Partial Differential Equations	3
MATH 7665	Numerical Linear Algebra	3
MATH 7667	Introduction to Approximation Theory	3
MATH 7821	Topics in Projective Geometry	3
MATH 7822	Topics in Linear Algebra	3
MATH 7823	Topics in Discrete Math	3
MATH 7824	Topics in Computational Mathematics	3

MATH 7825	Topics in Optimization	3
MATH 7826	Topics in Probability and Statistics	3
MATH 7827	Topics in Applied Mathematics	3
MATH 7840	Independent Study	1-3
MATH 7921	Readings in Mathematics	1
MATH 7922	Rdgs:Math Fndts-Cmptr Sc	1
MATH 7923	Readings: Discrete Mathematics	1
MATH 7924	Rdgs:Comp Mathematics	1
MATH 7925	Readings: Optimization	1
MATH 7926	Rdgs:Applied Prob/Stats	1
MATH 7927	Rdgs:Comp/Math Biology	1
MATH 8660	Mathematical Foundations of Finite Element Methods	3
MATH 8664	Iterative Methods in Numerical Linear Algebra	3

Dissertation

Code	Title	Hours
<i>Take the following</i>		30
MATH 8990	Doctoral Dissertation	1-10

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/phd-program-goals-objectives/>).

Statistics, MS

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) to see Mathematical and Statistical Sciences department information.

Introduction

The explosive growth in data collection over the past 10 years is unlikely to slow any time soon. This has created a dramatic increase in demand for individuals who can understand how to make decisions and predictions in the context of uncertainty through use of experimental design, statistical methods and programming, especially in the context of large data sets. This need spans many fields such as national security applications (including real-time monitoring of internet trends), environmental applications of climate modeling over space and time, medical and genomic applications that use electronic medical records to correlate demographics, genetic data and clinical outcomes over millions of individuals, and manufacturing with real-time monitoring of features over a variety of processes to both troubleshoot and optimize manufacturing.

Our MS in Statistics offers a general degree in statistics.

Students are exposed to a variety of coursework and have the opportunity to participate in real-world research and consulting through our innovative Statistical Consulting. Whatever specialization students choose, graduates with statistics degree will be prepared for a multitude of careers.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges

students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

Students must present 30 hours of course work (which are broken into 4 components as detailed below) and maintain a 3.0 GPA or above for the MS degree. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) courses with the MATH prefix. The remaining 6 hours must be either MATH courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.

All students must complete a written project and pass a final oral exam. The project is developed as a student-centered independent research component within MATH 5960 Master's Project unless the student has chosen the thesis option. For students choosing the thesis option, 4 to 6 hours (of the 30 required hours) may be devoted to the writing of a thesis through MATH 5950 Master's Thesis. By graduate school rules, Master's students, whether enrolled full-time or part-time, must complete all degree requirements within 7 years of matriculation.

1. Students must complete a minimum of 30 MATH credit hours.
2. Students must complete a minimum of 24 graduate (5000-level or higher) credit hours.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete 21 credit hours with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. The remaining 6 hours must be either MATH courses numbered 5000 or above or approved courses outside the department numbered 4000 or above.
2. Up to 9 semester hours of prior course work may be transferred in (subject to approval); these must be at the 5000 level or above with a B- or better grade. Courses already applied toward another degree (graduate or undergraduate) cannot be used toward the MS degree in Statistics.
3. The following MATH courses will **not** count toward a graduate degree: MATH 5010 History of Mathematics, MATH 5012 An Advanced Perspective on Number and Operation-MATH 5015 Capstone Course for Secondary Teachers, MATH 5017 Topics in Mathematics for Teachers, MATH 5198 Mathematics for Bioscientists, and MATH 5830 Applied Statistics.

Course Requirements for the MS Degree in Statistics

The MS degree in Statistics consists of 4 components:

1. core courses,
2. statistics electives,
3. other electives, and
4. MATH 5960 Master's Project or MATH 5950 Master's Thesis.

Core Courses

Code	Title	Hours
<i>Take the following</i>		12
MATH 5310	Probability	3
MATH 5320	Statistical Inference	3
MATH 5387	Applied Regression Analysis	3
MATH 6330	Workshop in Statistical Consulting	3

Statistics Electives

Code	Title	Hours
<i>Take nine hours of statistics electives are required. A running list is given below. Additional courses can be substituted given prior approval by the student's advisor and the Director of the Program in Statistics.</i>		9
MATH 5394	Experimental Designs	3
MATH 5792	Probabilistic Modeling	3
MATH 6101	Uncertainty Quantification	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 7384	Mathematical Probability	3
MATH 7386	Monte Carlo Methods	3
MATH 7393	Bayesian Statistics	3
MATH 7826	Topics in Probability and Statistics	3

Additional MATH Electives

Code	Title	Hours
<i>Take six hours from any graduate level MATH course that can be used for an MS or Ph.D. degree in Applied Mathematics can be used as an Other Elective. While these courses could be additional statistics-focused courses, the added flexibility allows students to direct their coursework into other areas of mathematics and/or science. The following courses will not count toward the M.S. in Statistics: MATH 5010, MATH 5012-5015, MATH 5017, MATH 5198, MATH 5250 and MATH 5830.</i>		6
MATH 5027	Topics in Applied Mathematics	3
MATH 5070	Applied Analysis	3
MATH 5110	Theory of Numbers	3
MATH 5135	Functions of a Complex Variable	3
MATH 5337	Intro to Statistical and Machine Learning	3
MATH 5350	Mathematical Theory of Interest	3
MATH 5351	Actuarial Models	3
MATH 5388	Machine Learning Methods	3
MATH 5390	Game Theory	3
MATH 5394	Experimental Designs	3
MATH 5410	Modern Cryptology	3
MATH 5432	Computational Graph Theory	3
MATH 5446	Theory of Automata	3
MATH 5490	Network Flows	3
MATH 5576	Mathematical Foundations of Artificial Intelligence I	3
MATH 5593	Linear Programming	3
MATH 5610	Computational Biology	3
MATH 5660	Numerical Analysis I	3

MATH 5661	Numerical Analysis II	3	MATH 7824	Topics in Computational Mathematics	3
MATH 5674	Parallel Computing and Architectures	3	MATH 7825	Topics in Optimization	3
MATH 5718	Applied Linear Algebra	3	MATH 7826	Topics in Probability and Statistics	3
MATH 5733	Partial Differential Equations	3	MATH 7827	Topics in Applied Mathematics	3
MATH 5779	Math Clinic	3	MATH 7921	Readings in Mathematics	1
MATH 5791	Continuous Modeling	3	MATH 7922	Rdgs:Math Fndts-Cmptr Sc	1
MATH 5792	Probabilistic Modeling	3	MATH 7923	Readings: Discrete Mathematics	1
MATH 5793	Discrete Math Modeling	3	MATH 7924	Rdgs:Comp Mathematics	1
MATH 5794	Optimization Modeling	3	MATH 7925	Readings: Optimization	1
MATH 6023	Topics in Discrete Math	3	MATH 7926	Rdgs:Applied Prob/Stats	1
MATH 6101	Uncertainty Quantification	3	MATH 7927	Rdgs:Comp/Math Biology	1
MATH 6131	Real Analysis	3	MATH 8660	Mathematical Foundations of Finite Element Methods	3
MATH 6360	Exploratory Data Analysis	3	MATH 8664	Iterative Methods in Numerical Linear Algebra	3
MATH 6376	Statistical Computing	3			
MATH 6380	Stochastic Processes	3			
MATH 6384	Spatial Data Analysis	3			
MATH 6388	Statistical and Machine Learning	3			
MATH 6395	Multivariate Methods	3			
MATH 6398	Calculus of Variations and Optimal Control	3			
MATH 6404	Applied Graph Theory	3			
MATH 6595	Nonlinear Programming	3			
MATH 6653	Introduction to Finite Element Methods	3			
MATH 6735	Continuum Mechanics	3			
MATH 6840	Independent Study	1-3			
MATH 6960	Research Methods in Mathematics and Statistics	3			
MATH 7101	Topology	3			
MATH 7132	Functional Analysis	3			
MATH 7376	Statistical Computing	3			
MATH 7381	Mathematical Statistics I	3			
MATH 7382	Mathematical Statistics II	3			
MATH 7384	Mathematical Probability	3			
MATH 7385	Stochastic Differential Equations	3			
MATH 7386	Monte Carlo Methods	3			
MATH 7393	Bayesian Statistics	3			
MATH 7397	Nonparametric Statistics	3			
MATH 7405	Advanced Graph Theory	3			
MATH 7409	Applied Combinatorics	3			
MATH 7410	Combinatorial Structures	3			
MATH 7413	Modern Algebra I	3			
MATH 7414	Modern Algebra II	3			
MATH 7419	Mathematical Coding Theory	3			
MATH 7421	Projective Geometry	3			
MATH 7593	Advanced Linear Programming	3			
MATH 7594	Integer Programming	3			
MATH 7595	Advanced Nonlinear Programming	3			
MATH 7663	Finite Difference Methods for Partial Differential Equations	3			
MATH 7665	Numerical Linear Algebra	3			
MATH 7667	Introduction to Approximation Theory	3			
MATH 7821	Topics in Projective Geometry	3			
MATH 7822	Topics in Linear Algebra	3			
MATH 7823	Topics in Discrete Math	3			

Capstone: Masters Project or Thesis

Students are required to complete a Master's Thesis or Project as part of the degree. Students must take 3 credits of Math 5950 (Master's Thesis) or Math 5960 (Master's Project) while completing the project.

Code	Title	Hours
<i>Take a minimum of three credits of the following</i>		3
MATH 5960	Master's Project	3
or MATH 5950	Master's Thesis	

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/ms-applied-mathematics-program-goals-objectives/>).

Applied Statistics Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click here to see Mathematical and Statistical Sciences department information.

Introduction

Coordinator: Joshua French Ph.D.

Telephone: 303-315-1709

E-mail: Joshua.French@ucdenver.edu

Website: <https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics> (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/graduate-certificate-applied-statistics/>)

There is a growing need for qualified statistical analysts of the ever-increasing amounts of data collected in business, industry, and government. The Certificate in Applied Statistics program is designed to give students a strong background in statistical methodology and data analysis in preparation for opportunities in the workforce or for graduate studies.

Students will gain competence in such topics as descriptive statistics, estimation, confidence intervals, probability and inferential techniques, simple and multiple regression, analysis of variance, and more advanced

topics. Students can focus on a particular application area such as economics, psychology, sociology, geology, or environmental science through the choice of an elective course and the data analysis project.

These program requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their program advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Certificate Requirements

Students must maintain a 3.0 GPA or above in these courses with no credit given for courses with grades below B-. Since a certificate is a University of Colorado Denver certification of a student's specialized knowledge in an advanced subject area, all courses in the certificate program must be taken in residency at University of Colorado Denver. Students must be enrolled in one course per year to maintain their status in the certificate program.

Certificates must be completed within 3 years from matriculation.

1. Students must complete a minimum of 13 MATH credit hours.
2. Students must complete a minimum of 13 graduate (5000-level or higher) credit hours.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Four courses and a 1 hour independent study are required as detailed below.

Fundamental Courses

Code	Title	Hours
<i>Take the following</i>		
MATH 5320	Statistical Inference (Offered: Spring)	3
MATH 5387	Applied Regression Analysis (Offered: Fall, Spring, Summer)	3

Advanced Applications

Code	Title	Hours
<i>Take one of the following</i>		
Topics vary from year to year. Course must be pre-approved by certificate coordinator and cannot be MATH 5830. Representative courses include:		
MATH 5394	Experimental Designs	3
MATH 5792	Probabilistic Modeling	3
MATH 6101	Uncertainty Quantification	3
MATH 6376	Statistical Computing	3
MATH 6380	Stochastic Processes	3
MATH 6384	Spatial Data Analysis	3
MATH 6388	Statistical and Machine Learning	3
MATH 7384	Mathematical Probability	3
MATH 7386	Monte Carlo Methods	3

MATH 7393	Bayesian Statistics	3
MATH 7826	Topics in Probability and Statistics	3
An additional course given prior approval by the student's advisor and the Director of Statistical Programs.		

Elective

Code	Title	Hours
<i>Take one of the following</i>		3
Any statistics course in the Department of Mathematical and Statistical Sciences at the 5000 level or higher (must be pre-approved by the Certificate Coordinator). MATH 5830 cannot apply towards the certificate.		
ECON 5150	Economic Forecasting	3
ECON 5813	Econometrics I	3
ECON 5823	Econometrics II	3
ENVS 5600	Applied Statistics for the Natural Sciences	3
SOCY 5183	Seminar: Quantitative Data Analysis	3

Project Requirement

Code	Title	Hours
<i>Complete an independent data analysis project with a report and presentation to demonstrate proficiency with data analysis techniques and a statistical computing software package. Enroll for one hour of MATH 5840, Independent Study, or in an equivalent course pre-approved by the Certificate Coordinator.</i>		1
MATH 5840	Independent Study	1

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mathematical-and-statistical-sciences/program-goals-objectives-certificate-statistics/>).

Modern Languages

Chair: Devin Jenkins

Program Assistant: Niki Mott

Office: Plaza Building, Room 118

Telephone: 303-315-7234

Fax: 303-315-7233

Mailing Address:

Campus Box 178

P.O. Box 173364

Denver, CO 80217-3364

Overview

The Master of Arts Program in Spanish at the University of Colorado at Denver and Health Sciences Center offers an alternative to exclusively literary studies that traditionally lead to doctoral programs. By integrating language, literature and cultural studies with ancillary work in other disciplines, the degree provides the broader expertise that will lead to or enhance careers in teaching, government, social services, business and international trade. Students will tailor the program to their specific interests and needs by developing a topical focus including courses within and outside the Dept. of Modern Languages. This program is not offered online.

Spanish and English Proficiency Requirements

Levels of Spanish and English proficiency will be determined through an oral interview with the Graduate Committee for each applicant. In order to

successfully engage in classroom activity at the graduate level, students in the Spanish MA program at UCD are expected to have advanced levels of speaking, reading and writing in both Spanish and English.

If the applicant proves deficient in any area or language, the Grad Committee has the right to refuse admittance.

Information for Graduate Students from the University of Colorado Denver catalog states: "A student who is noticeably deficient in the use of standard English in all oral and written work may not obtain an advanced degree from the University of Colorado Denver. Ability to use the language with precision and distinction should be cultivated as an attainment of major importance. The university reserves the right to test English proficiency for non-native speakers of English to confirm and validate sufficiency for credit-bearing course work and degree programs. Each department will judge the qualifications of its advanced students in the use of English. Reports, examinations and speech will be considered in estimating the candidate's proficiency."

Any non-native speaker of English who has not earned a degree from a University in the United States is required by the Department of Modern Languages to take the Test of English as a Foreign Language (TOEFL) and pass it with a minimum written score of 550, internet score of 80 or a computer score of 213 in order to be admitted into the Spanish MA program.

Teaching Assistantship (TA) Position

Teaching Assistantship (TA) positions may become available in the Spanish MA program. All applicants are interviewed by the Spanish MA faculty and positions are competitive. If you are interested in applying for a TA position, please pick up an application in our office or download it online (<https://clas.ucdenver.edu/modLang/home/spanish-program/master-arts-spanish/spanish-teaching-assistships/>). All applicants are interviewed by the Spanish MA faculty and positions are competitive.

Included with the Teaching Assistantship is a departmental scholarship that will cover the tuition for the course in which the student is concurrently enrolled.

Financial Aid

The department offers a limited number of teaching assistantships for graduate students on a semester-by-semester basis. Appointment is competitive and is typically based on a student's academic credentials. Contact the department for details. For information on grants, federal work-study programs, scholarships and loans, contact the Office of Financial Aid (303-556-2886).

For further information concerning the master's degree in Spanish at CU Denver, direct inquiries to the graduate advisor.

Requirements for Admission

In addition to the general admission requirements of the Graduate School, the Spanish MA program requires:

- an undergraduate GPA of at least 2.5, with a GPA of at least 3.0 in Spanish courses
- a bachelor's degree in Spanish is not required, although all candidates must demonstrate Spanish oral and written proficiency at the advanced level, as defined by the American Council on the Teaching of Foreign Languages
- two copies of all college transcripts
- three letters of recommendation, at least two of which should come from former college-level instructors.
- a statement of the applicant's purpose in pursuing the degree, in Spanish; any gaps, weaknesses or special circumstances affecting

an applicant's academic record should be addressed in the statement of purpose portion of the application

- a TOEFL score higher than 550 for students whose previous academic degree was completed in a non-English-speaking country
- Application Deadlines are: for Fall & Summer Admission – March 15th, and for Spring Admission - October 15th

In special circumstances, the department may modify its admission standards.

Western Regional Graduate Program

The Spanish Master's Program participates in the Western Regional Graduate Program (WRGP) (<http://wiche.edu/wrgp/>), which is a tuition-reciprocity arrangement with 15 participating states and 1 Commonwealth. The WRGP program allows students who are residents of these participating states to pay in-state tuition for the duration of the MA program.

In addition to Colorado, the participating states include: Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and the Commonwealth of the Northern Mariana Islands.

Students should indicate on their applications that they are requesting residence status through WRGP if applying from out of state.

Programs

- Spanish, MA (p. 375)

Spanish Faculty

PROFESSOR:

Andrés Lema-Hincapié, PhD, Cornell University and PhD, University of Ottawa

ASSOCIATE PROFESSORS:

Michael Abeyta, PhD, University of California-Davis

Kathleen Bollard, PhD, University of California-Berkeley

María Luisa Fernández Martínez, PhD, University of California, Irvine

Devin Jenkins, PhD, University of New Mexico

ASSISTANT PROFESSOR:

Alyssa Martoccio, PhD, University of Illinois

ASSISTANT PROFESSOR-CLINICAL TRACK:

Gabriela de Robles, PhD, Georgetown University

INSTRUCTORS:

Ileana Gross, MA, University of Georgia

Amanda Ritchie, MA, University of Akron

Graduate Advisor:

ASSOCIATE PROFESSOR:

Michael Abeyta, PhD, University of California-Davis

Study Abroad Advisor:

ASSOCIATE PROFESSOR:

Devin Jenkins, PhD, University of New Mexico

Internship Director:**PROFESSOR:**

Andrés Lema-Hincapié, PhD, Cornell University and PhD, University of Ottawa

Affiliated Undergraduate Programs and Faculty**Arabic Faculty****INSTRUCTOR:**

Soubeika Bahri, Ph.D, City University of New York

Chinese Faculty**ASSISTANT PROFESSOR AND ADVISOR:**

I-hao Victor Woo, PhD, Boston University

LECTURER:

Jing Li, BA, Nankai University

French Faculty**ASSOCIATE PROFESSOR, CLINICAL TRACK:**

Linda Alcott, PhD, University of Colorado

SENIOR INSTRUCTOR AND ADVISOR:

Lori Willard, PhD, University of Colorado

INSTRUCTOR:

Jocelyne Hunsinger, BA, University of Ottawa (Ontario, Canada)

German Faculty**LECTURER:**

Maggie Rosenau, PhD, University of Colorado

Latin Faculty**LECTURERS:**

Mary De Forest, PhD, University of Colorado

Alan Sumler, PhD, City University of New York

Linguistics Faculty**ASSOCIATE PROFESSOR:**

Devin Jenkins, PhD, University of New Mexico

ASSISTANT PROFESSORS:

Alyssa Martoccio, PhD, University of Illinois

I-hao Victor Woo, PhD, Boston University

ASSISTANT PROFESSOR-CLINICAL TRACK:

Gabriela de Robles, PhD, Georgetown University

INSTRUCTOR AND ADVISOR:

Soubeika Bahri, Ph.D, City University of New York

Emeritus Faculty:**ASSOCIATE PROFESSORS:**

Kathleen Bollard

Diane Dansereau

INSTRUCTORS:

Tim Phillips

Ted Wendelin

Arabic (ARAB)

ARAB 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Chinese (CHIN)

CHIN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages.

Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

CHIN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods.

This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

CHIN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

French (FREN)

FREN 5082 - Introduction to Translation (3 Credits)

Introduces the methodology and practice of written translation from English to French/French to English. Students will learn techniques on how to avoid word by word translation, faulty sentence structure and anglicisms by focusing on grammar, syntax and vocabulary. Note: Students must demonstrate third-year competence and advanced writing skills in English. Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4082. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5200 - French Civilization Through the Nineteenth Century (3 Credits)

Development of French culture and civilization from a historical perspective, beginning with the origins of France and continuing through the 19th century. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: spring term of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5210 - French Civilization - Twentieth and Twenty-First Centuries (3 Credits)

(Continuation of FREN 5200) The development of French culture and civilization in a historical perspective from the beginning of the 20th century to the present. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: fall term of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5430 - Nineteenth Century French Novel (3 Credits)

Development of the French novel during the 19th century. Includes such writers as Stendhal, Hugo, Balzac, George Sand, Flaubert, Maupassant and Zola. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4430. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5480 - Twentieth Century French Novel (3 Credits)

Represents novels of the 20th century, a period of great innovation in the French novel. Authors generally treated are Camus, Giono, Ernaux and Duras. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4480. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5510 - French Women Writers (3 Credits)

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4510 and WGST 4511/5511. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5520 - Voices of Haiti and the Caribbean (3 Credits)

This course explores the literary production of contemporary Haitian and Caribbean writers within varied cultural and gender contexts. It focuses on historical, societal and post-quake issues confronting both men and women writers of the French Caribbean. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4520. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5600 - History of the French Language (3 Credits)

Studies phonological, morphological, and syntactic changes in the language of Gaul from Latin to modern French. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

FREN 5691 - Methods of Teaching Modern Languages II (3 Credits)
A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

FREN 5840 - Independent Study: FREN (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

FREN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

FREN 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Summer.

German (GEMN)

GRMN 5690 - Methods of Teaching Modern Languages (3 Credits)
Studies the methods and practices of teaching modern languages.

Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

GRMN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods.

This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

GRMN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GRMN 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Latin (LATN)

LATN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Spanish (SPAN)

SPAN 5000 - Introduction to Graduate Studies in Spanish (3 Credits)

Introduces critical methodologies and critical perspectives of practices of signification such as literature and film, among others, in the context of culture and history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

SPAN 5010 - History of the Spanish Language (3 Credits)

Studies the history of the Spanish language, both internal and external, from the language's Latin roots to the present. Historical phonetics are emphasized, though all features of the language are discussed. Prereq: Graduate standing. Cross-listed with SPAN 4010. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5020 - Spanish Sociolinguistics (3 Credits)

Studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape. Prereq: Graduate standing. Cross-listed with SPAN 4020. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5030 - The Learning and Teaching of Heritage Speakers (3 Credits)

Studies Spanish heritage speakers, including characteristics of how they learn and how best to teach them. Includes definitions of heritage speakers, strengths and weaknesses in learning Spanish, and attitudes of and towards heritage speakers in the classroom. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4030. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5040 - Spanish Classroom Methods and Practice (3 Credits)

Focuses on the second language learning and teaching of Spanish in a classroom context. Looks at topics including second language vocabulary, pronunciation, grammar, and types of feed back. Practical component of activity design and learning/teaching strategies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4040. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

SPAN 5060 - Dialects of the Spanish-Speaking World (3 Credits)

Studies the geography of the Spanish language in those countries where it is spoken as a primary language. Includes a comparison of dialect features and a study of factors that contribute to the diversity of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4060. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5070 - Spanish Applied Linguistics & Second Language Acquisition (3 Credits)

This course is a survey of various areas of the field of linguistics in general (e.g. morphology, syntax, semantics, pragmatics, etc.) as well as specific aspects of the structure (and acquisition) of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4070. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5076 - Spanish in Colorado (3 Credits)

A study of the Spanish language in its social context in Colorado and New Mexico. We will study historical factors as well as current social factors that contribute to the use of the Spanish language in this region. Prereq: Graduate standing. Cross-listed with SPAN 4076. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Summer.

SPAN 5080 - Spanish in the United States (3 Credits)

A study of the Spanish language in its social context as a language of the United States. In addition to studying bilingualism and language traits, factors such as race, gender, class, education, nationality, age, generation and language attitudes are considered. Prereq: Graduate standing. Cross-listed with SPAN 4080. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5099 - Special Topics in Linguistics (3 Credits)

Varying topics in Hispanic language and literature not otherwise covered by regular courses. Note: May be taken more than once provided that the topics are different each time. Prereq: graduate standing. Cross-listed with SPAN 4099. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5110 - Contemporary Spanish Literature (3 Credits)

Major works published since the Spanish Civil War, which ended in 1939. Prereq: Graduate standing. Cross-listed with SPAN 4110. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5130 - Medieval Spanish Literature (3 Credits)

Examines Spanish literature from the jarchas and the Cid through the Celestina in the context of the reconquest. Considers the construction of the Christian knight as a hero and the corresponding representations of women, Jews and Muslims. Prereq: Graduate standing. Cross-listed with SPAN 4130. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5150 - Masterpieces of Spanish Literature (3 Credits)

The most enduring works in the literature of Spain across the centuries. Prereq: Graduate standing. Cross-listed with SPAN 4150. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5170 - Golden Age Drama (3 Credits)

Spanish drama of the 16th and 17th centuries, the period of greatest dramatic productivity in the nation's history. Readings include selections from Lope de Vega, Tirso de Molina, Calderon de La Barca, and others. Prereq: graduate standing. Cross-listed with SPAN 4170. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5180 - Modernism (3 Credits)

Examines the first real flowering of Spanish American literature, from about 1880 to 1910. The dominant genres of the period were the short story, the essay, and lyric poetry. Readings come from Dario, Jose Enrique Rodo, Manuel Gutierrez Najera, Manuel Diaz Rodriguez and others. Prereq: graduate standing. Cross-listed with SPAN 4180. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5190 - Nineteenth-Century Spanish Novel (3 Credits)

The Spanish novel in one of its most productive periods, beginning with romanticism and carrying through the realist and naturalist movements. Prereq: graduate standing. Cross-listed with SPAN 4190. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5300 - Generation of 1898 (3 Credits)

Spanish literature from around the turn of the century through the first third of the 20th century, reflecting the deep intellectual and cultural foment occasioned in part by Spain's loss of the Spanish-American War of 1898. Prereq: Graduate standing. Cross-listed with SPAN 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5320 - Interculturalism and Transnationalism in Modern Spain (3 Credits)

Students will examine experiences of Spaniards living in different parts of the world and the circumstances of either foreigners or migrants living in Spain, through their visual and literary texts, film, photographs, documentaries and other products of current popular culture, such as contemporary television. Prereq: Graduate standing. Cross-listed with SPAN 4320. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5330 - Modern Culture of Spain through Film and Narrative (3 Credits)

Culture of modern Spain studied through Spanish film. The death of military dictator Francisco Franco opened the process for the recuperation of a usurped democratic, representational system that has become the basis of a cultural and economic resurgence. Taught in Spanish. Prereq: graduate standing. Cross-listed with SPAN 4330. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5340 - Race, Class, and Gender in Spanish Golden Age Literature (3 Credits)

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq: graduate standing. Cross-listed with SPAN 4340 and WGST 4540/5540. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5350 - Don Quijote (3 Credits)

The complete Don Quijote in Spanish, focusing on its historical, social, and philosophic context, and its role in the emergence of the modern novel. Prereq: graduate standing. Cross-listed with SPAN 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5360 - Women and the Spanish Civil War (3 Credits)

Focuses on the role of Spanish women during the Second Republic, the Civil War, the dark & starving postwar, & the inescapable exile that was a consequence of the conflict. Discusses several texts & films that portray this silenced odyssey, as well as historical, ideological & cultural documents of critical value & significance. Cross-listed with SPAN 4360. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPAN 5380 - Romanticism in Spain (3 Credits)

The romantic movement in 19th century Spain through plays, poems, essays. Prereq: graduate standing. Cross-listed with SPAN 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5399 - Special Topics: Spanish Peninsular Literature (3 Credits)

Varying topics in Spanish peninsular literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5401 - Survey of Spanish-American Literature I: Pre-1898 (3 Credits)

The most important works in the literature of Spanish America from the Colonial Period to the Late 19th Century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4401. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5411 - Contemporary Spanish-American Novel (3 Credits)

The novel in Spanish America since the Second World War, the period in which the greatest number and quality of works has been produced. Prereq: graduate standing. Cross-listed with SPAN 4411. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5450 - Masterpieces of Spanish-American Literature (3 Credits)

Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Prereq: graduate standing. Cross-listed with SPAN 4450. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5501 - Borges: An Introduction to His Labyrinths (3 Credits)

The works of Jorge Luis Borges (short stories, essays, poetry, translations, essays anthologies, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4501. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5512 - Contemporary Argentine Short Stories (3 Credits)

The short stories by extraordinary Argentine writers, such as Jorge Luis Borges, Silvina Ocampo, Julio Cortazar, Griselda Gambaro, Adolfo Bioy Casares, and Manuel Muica Laineza, among others, will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4512. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial (3 Credits)

Survey of Mexican literature and culture from pre-Columbian times to the colonial era. Prereq: graduate standing. Cross-listed with SPAN 4521. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5522 - Mexican Literature II: 19th to 21st Centuries (3 Credits)

Survey of Mexican literature and culture from the early modern to contemporary literature. Prereq: graduate standing. Cross-listed with SPAN 4522. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5525 - Orientalisms In The Hispanic Traditions (3 Credits)

Advanced studies of orientalism in the Hispanic tradition: the Hispano-Arabic cultural heritage in Early Medieval Spain and in contemporary Hispanic cultures, as well as the influence of other eastern religions and cultures, such as Judaism or Buddhism. Prereq: graduate standing. Cross-listed with SPAN 4525. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5541 - Unexpected Lives: Ibero-American Queer Cinema (3 Credits)

Provocative films, by courageous Ibero-American filmmakers, on controversial topics (homosexuality, Lesbianism, bisexuality, transgender individuals, feminism, etc.) will be studied to teach students to think globally as well as critically about LGBTQ individuals in the context of Ibero-American cultures. Prereq: graduate standing. Cross-listed with SPAN 4541. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5550 - Garcia Marquez: Words of Magic (3 Credits)

The works of Gabriel Garcia Marquez (stories, short novels, novels, newspaper articles, interviews, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4550. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5590 - Ibero-American Thought (3 Credits)

The course examines philosophical works by essayists, literary critics, and cultural thinkers from Spanish-American countries and the Iberian Peninsula. Besides reading philosophical works in their original form, students will read scholarly commentaries to deepen their understanding of those works. Prereq: graduate standing. Cross-listed with SPAN 4590. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5599 - Special Topics: Latin American Literature (3 Credits)

Varying topics in Latin American literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 hours.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5600 - Seminar in Spanish Creative Writing: Poetry and Short Fiction (3 Credits)

A capstone writing course. Semester writing project will be collected poems and short stories. Prereq: graduate standing. Cross-listed with SPAN 4600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

SPAN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

SPAN 5840 - Independent Study: SPAN (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

SPAN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPAN 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPAN 5950 - Master's Thesis (1-6 Credits)

This course is for students writing a master's thesis. It includes individual mentoring with one or more faculty members, individualized and library-based research. May also include field research. Students must consult with a faculty member before enrolling. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

SPAN 5970 - Special Topics in Literature (3 Credits)

Varying topics in Hispanic literature not otherwise covered by regular courses. Prereq: Graduate standing. Cross-listed with SPAN 4970. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

Spanish, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Please click here (p. 367) to see Modern Languages department information.

The Master of Arts Program in Spanish at the University of Colorado at Denver and Health Sciences Center offers an alternative to exclusively literary studies that traditionally lead to doctoral programs. By integrating language, literature and cultural studies with ancillary work in other disciplines, the degree provides the broader expertise that will lead to or enhance careers in teaching, government, social services, business and international trade. Students will tailor the program to their specific interests and needs by developing a topical focus including courses within and outside the Dept. of Modern Languages. Students choose from two options for completion of their Master's degree: either they complete their coursework and take a comprehensive written and oral exam in their last semester, or they complete a six credit thesis under the direction of Spanish faculty. This program is not offered online.

These degree requirements are subject to periodic revision by the academic department, and the College of Liberal Arts and Sciences reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Requirements

1. Students must complete 30 credit hours, with a minimum of 24 SPAN credit hours.
2. Students must complete a minimum of 30 graduate level (5000 or above) credit hours.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete course requirements as pass/fail.
4. All credit hours for the certificate must be earned at the University of Colorado Denver.

Program Restrictions, Allowances and Recommendations

1. Candidates in Spanish must satisfy the general requirements of the Graduate School as outlined in this catalog and will be required to complete 33 hours of course work distributed with respect to the Thesis or Non-Thesis Options outlined below.
2. No more than one undergraduate course (3 semester hours) may be applied toward the MA degree, and that course must have been taken at the 4000 level or above and in an ancillary field outside the Department of Modern Languages.
3. Failure to maintain a 3.00 Program GPA will result in the student being placed on academic probation. Courses completed with grades below the letter grade of B- (GPA 2.7) may not be applied toward fulfillment of the requirements for any graduate (doctoral or master's) degree within the Graduate School.
4. Students may elect to take three courses (9 semester hours) outside the department.

Required course

Code	Title	Hours
<i>Take the following</i>		3
SPAN 5000	Introduction to Graduate Studies in Spanish	3

Literature and Culture

Code	Title	Hours
<i>Take two of the following</i>		6
SPAN 5030	The Learning and Teaching of Heritage Speakers	3
SPAN 5110	Contemporary Spanish Literature	3
SPAN 5130	Medieval Spanish Literature	3
SPAN 5150	Masterpieces of Spanish Literature	3
SPAN 5170	Golden Age Drama	3
SPAN 5180	Modernism	3
SPAN 5330	Modern Culture of Spain through Film and Narrative	3
SPAN 5340	Race, Class, and Gender in Spanish Golden Age Literature	3
SPAN 5350	Don Quijote	3
SPAN 5360	Women and the Spanish Civil War	3
SPAN 5399	Special Topics: Spanish Peninsular Literature	3
SPAN 5411	Contemporary Spanish-American Novel	3
SPAN 5450	Masterpieces of Spanish-American Literature	3

SPAN 5521	Mexican Literature I: pre-Columbian and Colonial	3
SPAN 5522	Mexican Literature II: 19th to 21st Centuries	3
SPAN 5525	Orientalisms In The Hispanic Traditions	3
SPAN 5590	Ibero-American Thought	3
SPAN 5970	Special Topics in Literature	3

Linguistics

Code	Title	Hours
<i>Take two of the following</i>		6
SPAN 5010	History of the Spanish Language	3
SPAN 5020	Spanish Sociolinguistics	3
SPAN 5040	Spanish Classroom Methods and Practice	3
SPAN 5060	Dialects of the Spanish-Speaking World	3
SPAN 5070	Spanish Applied Linguistics & Second Language Acquisition	3
SPAN 5076	Spanish in Colorado	3
SPAN 5080	Spanish in the United States	3
SPAN 5690	Methods of Teaching Modern Languages	3
or MLNG 5690	Methods of Teaching Modern Languages	

Topic Focus Electives

Code	Title	Hours
<i>Take a minimum of 4 graduate-level Spanish courses for Topic Focus/electives in literature, linguistics, culture, methodologies of teaching.</i> ¹		12

¹ Students may include up to two courses (3-6 credits) from outside the Modern Languages Department, as approved by their advisor.

Thesis Option

Code	Title	Hours
<i>Complete a Master's Thesis, according to Graduate School Policies and under guidance of the graduate program director.</i>		6
SPAN 5950	Master's Thesis (preparation and writing)	6

Non-Thesis Option

Code	Title	Hours
<i>Take a minimum of 2 additional graduate-level Spanish courses for Topic Focus/electives in literature, linguistics, culture, methodologies of teaching.</i>		6

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/modLang/spanish-program/master-arts-spanish/>).

Political Science

Chair: Kathleen Bollard

Program Assistant: Kelly Stritzinger

Digital & Print Communications Specialist: Elly Steinmetz Lewis

Undergraduate Advisor: Karen Breslin

Pre-law Advisor: Glenn Morris

Graduate Advisor: Michael Berry

Director, New Directions Program: Steve DelCastillo

Office: Student Commons, Room 3212

Telephone: 303-315-1770

Fax: 303-315-1780

Website: <https://clas.ucdenver.edu/polisci/>

Overview

Political science is the study of people, power and the public good. Looking at a variety of societies, institutions and interpersonal situations, the discipline asks who has power, where this power comes from, how it is used, how it promotes or impairs the public good and how the public good is defined. Political science draws from other fields, such as psychology, philosophy, economics, sociology and world literature. Finally, it explores the relationship between idealism and realism, between theory and practice, between political thought and personal action.

Opportunities for students with a degree in political science include careers in business, teaching, journalism, community organizing and government service. A political science degree also serves as good preparation for professional training in law and public administration. Students' internship experiences increase their job opportunities. Students with an MA in political science may find careers in such areas as business, government research and administration and teaching at the community-college level. The CU Denver Political Science Master's Program provides many opportunities for professional development through political internships, for community-based learning through a focused community organizing and development curriculum (including many teaching, research and service partnerships with local community organizations), and for international engagement through a robust international politics curriculum, study abroad opportunities, and partnerships with international organizations.

Please visit the political science department website (<https://clas.ucdenver.edu/polisci/>) for detailed information on programs, faculty, students, courses and syllabi, community involvement and service learning, internships and photographs.

Fourth World Center for the Study of Indigenous Law and Politics

Executive Director: Glenn T. Morris

Telephone: 303-315-1762

This center provides a research clearinghouse to students and faculty at CU Denver on legal and political issues that affect indigenous peoples (the Fourth World). In addition to supporting a modest library of rare books and periodicals on indigenous issues, the center also stocks video and audio resources on subjects of indigenous politics and a substantial news file archive on current developments in the Fourth World. The center has produced curricular materials, including the Fourth World Bulletin, for use in international relations and area-studies courses.

Center for NEW DIRECTIONS in Politics and Public Policy

Director: Steve DelCastillo

Website: <https://clas.ucdenver.edu/newdirections/>

This center provides academic programs, courses and research focused in the areas of politics and public policy with the purpose of developing the leadership capacities necessary to address changing public priorities for the 21st century within neighborhoods, communities, governmental jurisdictions, labor organizations, and nonprofit entities. Students in the Center's academic programs include working professionals in public and non-profit sectors; elected officials; community activists; interest-group

stakeholders; educators from a wide range of demographic, occupational, and personal backgrounds; and simply concerned citizens. The New Directions program offers professional internships with a wide variety of political jurisdictions, community-based groups, and labor organizations across Colorado, including several funded internships.

The center offers both undergraduate and graduate degrees in political science with emphases in public policy and administration.

Requirements for Admission

Students applying for admission to the MA program in political science should have an undergraduate degree in political science or related field (e.g., international affairs or public administration, among others) or have completed at least 18-credit hours of previous academic work in political science, at least 9 hours of which should be at the upper-division or graduate level. The department may make exceptions to these requirements in unusual cases (for instance, if course work in related fields such as psychology, economics and history compensates for the deficiencies in political science). Applicants should have an undergraduate GPA of at least 3.0 to be considered. In their applications, students must submit official transcripts and three letters of recommendation (academic references preferred) as specified by the Graduate School. In addition, applicants must submit a statement of academic objectives and an academic writing sample. Standardized test scores are not required of applicants but will be considered if submitted. Program applicants who face difficulties in meeting these requirements should reach out for individual discussion with our Graduate Program director (for example, if an undergraduate GPA is below 3.0, or if letters of recommendation from professors taken years ago are difficult to obtain).

In order to take graduate courses in political science, students must either be admitted to the MA program, a declared 4+1 BA/MA student, or secured permission to take courses as a non-degree student. Non-degree students interested in our certificate programs or in taking graduate courses for any reason should reach out to the Department Graduate Advisor to secure admission to courses as a non-degree seeking student.

See more about our admissions on our website (<https://clas.ucdenver.edu/polisci/graduate/>).

Programs

- New Directions in Public, Non-Profit and Community Leadership, Political Science, MA (p. 384)
- Political Science, MA (p. 386)
- Political Science MA / Master of Business Administration (MBA) Dual Degree (p. 388)
- Labor Leadership Certificate (p. 389)
- Public, Nonprofit and Community Leadership Graduate Certificate (p. 390)

Professors:

Christoph Stefes, PhD, Denver University

Associate Professors:

Michael J. Berry, PhD, University of Colorado

Bassem Hassan, PhD, University of Denver

Betsy Jose, PhD, University of Pittsburgh

Glenn T. Morris, JD, Harvard University School of Law

Tony Robinson, PhD, University of California, Berkeley

Thorsten Spehn, PhD, University of Denver

James Walsh, PhD, University of Colorado

Assistant Professors:

Sasha Breger-Bush, PhD, University of Denver

Chad Shomura, PhD, Johns Hopkins University

Senior Instructors:

Harvey Bishop, MA, University of Colorado

Instructors:

Karen Breslin, JD, University of Denver

Adjunct Faculty:

Charles Norton, JD, University of Chicago

Nicholas Rockwell, PhD, University of California, Los Angeles

Martin Widzer, PhD, University of Denver

Emeritus Faculty:

Mike Cummings, PhD, Stanford University

Joel Edelstein, PhD, University of California, Riverside

Jana Everett, PhD, University of Michigan

Stephen C. Thomas, PhD, Stanford University

Political Science (PSCI) Courses

PSCI 5000 - State of the Discipline (3 Credits)

Introduces graduate study in political science. Provides an overview of theories and methods in the four fields of American politics, political theory, comparative politics and international relations. Guest lectures by department faculty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall.

PSCI 5008 - Graduate Topics in Political Science (1-3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, spring, summer. Repeatable.

Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall, Spring, Summer.

PSCI 5009 - Politics of the Budgetary Process (3 Credits)

Explores budgeting and financial management in the public and nonprofit sectors. An overview of public sector and nonprofit fiscal management is provided, along with thorough exploration of the political influences that affect financial decision-making. Note: Offered as a special topics course in an intensive three-weekend format, which is reflected in the syllabus. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5011 - GIS in Political Science (3 Credits)

Computer lab course developing methodological skills in Geographic Information Systems (GIS) in political contexts. Geospatial computerized mapping skills are important in political fields such as urban planning, electoral analysis, environmental justice, demographics, public health, and criminal justice. Designed for beginners. Cross-listed with PSCI 4011. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Spring.

PSCI 5013 - Philosophical Problems in the Social Sciences (3 Credits)

Explores the fundamentals of the conduct of inquiry; concept formation and theory construction in the social sciences; issues related to value judgments and objectivity, social praxis, human nature and political choice. Cross-listed with SSCI 5013. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5014 - Seminar: American Politics (3 Credits)

Foundations of U.S. politics and contemporary political issues. Federal/state/community relations. Relationship among the three branches of the Federal government. Colorado controversies arising under the U.S. Constitution. Cross-listed with PSCI 4094. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5024 - State Politics: Focus on Colorado (3 Credits)

Analysis of unique aspects of Colorado government and politics. Political comparison of Colorado with other states. Preparation and discussion of research papers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall, Summer.

PSCI 5025 - Local Governance and Globalization (3 Credits)

Introduces international political economy, consequences of globalization for localities, interplay between wealth and power among nations, multinational corporations, NGOs and the UN, and impact of their actions on local governments. Topics include development, aid, trade, outsourcing, eco-sustainability and global equity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).. Cross-listed with PSCI 4025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5044 - The Presidency (3 Credits)

An overview of the historical, constitutional, and functional aspects of the presidency. Focuses on the powers and vulnerabilities of the presidency and on the style and politics of the current president.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4044. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5054 - The Legislative Process (3 Credits)

An intensive examination of the structures and interactions through which laws are made in the United States. The major emphasis is the national level, but considerable attention is devoted to state legislatures and local lawmaking bodies. Impact of money and interest groups.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5057 - Religion and Politics (3 Credits)

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Cross-listed with PSCI 4057, and RLST 4500, 5500. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5075 - Gentrification and Social Equity (3 Credits)

Study causes and consequences of urban gentrification, and explore strategies of grassroots resistance and social equity solutions that are being mobilized to challenge the forces of gentrification. Contrast common celebrations of the waves of capital reinvestment that are fueling urban revitalization with the frequent claim of many low-income neighborhoods: "Gentrification is Class War!" Cross-listed with PSCI 4075. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5084 - Local Government and Administration (3 Credits)

Policy and administrative challenges faced by local government in the 21st Century. Emphasis on cities under federalism, alternative forms of city governance, and new challenges from increasingly diverse constituents. Issues of poverty, public safety, health, transportation, environment, corruption and accountability. Cross-listed with PSCI 4084. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5085 - Comparative Governance: Environment and Society (3 Credits)

Focuses on how public & private actors at various levels of governance address pressing social & environmental issues such as aging societies, drug abuse, air pollution & global warming. Students will learn to analyze the dynamics of conflict & cooperation, using main concepts and theories of governance literature. Cross-list PSCI 4085. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5094 - Seminar: Urban Politics (3 Credits)

An intensive analysis and research of major aspects of politics and government in metropolitan areas. Impact of corporations and higher levels of government on cities. Opportunities for, and barriers to, citizen participation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5105 - Comparative Politics: Europe (3 Credits)

Examination and writing of research papers on selected topics of industrial democracies, especially those of Europe. Cross-listed with PSCI 4105. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5135 - Seminar: Political Economy of Latin America (3 Credits)

Focuses on the political economies and cultures of Latin America. Particular attention is given to the impact of the export-led growth strategy on social and political development. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5145 - Indigenous Politics (3 Credits)

Surveys the status of the world's native peoples and nations, and the role of law and politics in the future of indigenous peoples in the global arena. Examines questions of human rights, economic development, and international law and politics. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4146 and ETST 4146. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5176 - Gandhi's Legacy: Non-Violent Resistance Today (3 Credits)

This course assesses the legacy of Gandhi's nonviolent struggle against systemic oppression. We examine Gandhi's ideas and practices, consider Western images of political violence, and then focus on questions and possible answers raised by empirical studies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4176. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5206 - Social Movements, Democracy and Global Politics (3 Credits)

Examines global social movements as new political actors within world politics; how theoretical perspectives in international relations and democracy address these actors; and the forms of interaction among these actors, states, and global governance institutions. Cross-listed with PSCI 4206. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5216 - Seminar: International Relations (3 Credits)

Introduces contending theories, empirical studies, and research methods in the field. Writing and discussion of comprehensive research papers in the field of international power politics and alternative attempts at controlling conflicts among nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5217 - Human Rights in Theory and Practice (3 Credits)

Explores the ideas of human rights and the practical efforts to actualize rights in society. Students study the theories of rights and the evolution of rights in history, as well as work with a service organization. Cross-listed with PSCI 4217. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5224 - Dictatorships in 21st Century (3 Credits)

Analyzes and classifies political systems of non-democratic regimes. Reviews earlier and contemporary theories that explain the origins, survival and death of authoritarian regimes. Discusses the impact of dictatorial rule on domestic developments as well as on international relations. Cross-listed with PSCI 4224. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5225 - Democracy and Democratization (3 Credits)

Examines the conditions under which countries turn from authoritarianism towards democracy and become stable democratic regimes. Also examines the impact of foreign and international factors on new democracies. Cross-listed with PSCI 4225. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5236 - Seminar: American Foreign Policy (3 Credits)

Examines selected methodological and substantive problems. Particular emphasis on elements of national decision making, America's adaptation to the changing world, and opportunities for student contributions through research and discussion. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5238 - Seminar: Comparative Foreign Policy (3 Credits)

Examination of the effects of leaders, groups, institutions, strategic cultures and external influences on national foreign policy-making processes and comparative analysis of foreign policy making of great and emerging powers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5245 - Gender, Globalization and Development (3 Credits)

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with PSCI 4248 and WGST 4248/5248. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5256 - Seminar: National Question and Self-Determination (3 Credits)

Designed to provide students with a broad theoretical and empirical understanding of the causes of ethnic conflicts and to assess different strategies of conflict resolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5265 - Social Justice And Globalization (3 Credits)

Examines issues of justice and ethical responsibility in a globalizing world. Do moral obligations of individuals and institutions end at national borders or do they encompass all human beings and extend to the environment and to future generations? Cross-listed with PSCI 4265.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5266 - International Law (3 Credits)

Investigates the body of law that regulates relations between nations and provides a framework for solving common problems and disputes between nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4266. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5274 - Conflict Resolution and Public Consent Building (3 Credits)

Alternative strategies for resolving or mediating conflicts facing public or nonprofit organizations and for building public consent, with emphasis on personal, interpersonal, organizational, interest-group, cross-cultural, and roots of conflict and bases for consent. Cross-listed with PSCI 4274. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5276 - Conflicts and Rights in International Law (3 Credits)

Explores contending interpretations and practices in international law regarding issues such as the legitimacy of humanitarian intervention, efficacy of truth commissions, tensions between truth and justice in cases of genocide and war crimes, and legal changes needed to devise viable rules. Cross-listed with PSCI 4276. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5286 - International Relations: War or Peace? (3 Credits)

Presents alternative theoretical frameworks for the explanation of war and peace. Investigations of the efficacy of international law, just-war norms and the UN in preventing or containing conflict.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4286. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5326 - Advanced International Political Economy: Globalization (3 Credits)

Engages the current debate about globalization. Conceptualizes globalization and evaluates the pros and cons of global trade and finance for developed and developing countries. Develops a model for a sustainable and just global economy. Cross-listed with PSCI 4326.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5354 - Seminar: Environmental Politics and Policy (3 Credits)

Consideration of competing models of the policy process in natural-resources decision making. Focus on selected case studies. Impact of environmental and pro-growth forces on the political process.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5365 - Global Ecological Crises (3 Credits)

Overview of global ecological problems such as climate change, transboundary pollutions, and loss of bio-diversity in an attempt to understand the political, economic, and cultural forces behind these problems and the status of legal and policy initiatives to address them. Cross-listed with PSCI 4365. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5414 - Non-Profits and Social Change (3 Credits)

Explores role of non-profits in catalyzing social change. What are obstacles and opportunities to leveraging social change through nonprofits? What factors shape non-profits to be either transformational or systemstabilizing forces? Cross-listed with PSCI 4414. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5424 - The Social Economy and Sustainable Development (3 Credits)

Theory and practice of social economy initiatives like worker cooperatives, micro-credit networks, mutual aid associations and the fair trade movement. How do grass-roots activists and legal frameworks affect the direction and possibilities of the solidarity economy?

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5434 - The Cooperative Movement: Politics and Policy (3 Credits)

Explores the history, current status, and emerging developments in the cooperative movement, both domestic and global. Topics include the political, organizational, and financial challenges and opportunities facing worker, producer, and consumer cooperatives. Examines how cooperative enterprises have adopted both reformist and revolutionary responses to the capitalist system, and how legal regimes and grassroots movements shape the future of cooperative enterprises. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5446 - Advanced Indigenous Peoples' Politics (3 Credits)

Builds upon the theoretical and applied foundations of PSCI 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations and the Organization of American States systems. Note: this course assumes that students have completed PSCI 4144 or 4146 or equivalent. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4446. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5457 - American Political Thought (3 Credits)

Critical examination of American political life at the intersections of social categories such as race, class, gender, sexuality, disability, and Indigeneity. Exploration of key and marginal thinkers through a variety of texts and genres. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4457, ETST 4457, and ETST 5457. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5468 - Research Methods in Political Science (3 Credits)

Analysis and evaluation of research methods, techniques, and empirical materials in political science application to Internet research. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5477 - The U.S. Constitution: Law and Politics (3 Credits)

An intensive analysis of the most recent doctrinal developments in the areas of federal jurisdiction, federalism, separation of powers, commerce, taxing and war powers, civil liberties and civil rights. Note: this course assumes that students have completed PSCI 4477 or 4487 or equivalent.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5535 - Labor and Working Class Politics (3 Credits)

Explores the status of the labor movement both in the U.S. and internationally, as well as the political, philosophical, and social implications of socioeconomic class status and identity. Cross-listed with PSCI 4535. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5545 - Immigration Politics (3 Credits)

Introduces students to central theories of migration and a survey of immigration law and policy in the 20th century. Highlights experiences of Mexican and Latin American immigrants and related topics, including U.S.-Mexican foreign relations, bilingual education, undocumented immigration and globalization. Cross-listed with PSCI 4545. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5548 - Labor Law and Collective Bargaining (3 Credits)

Explores the history, current status, and emerging developments in U.S. labor law. Examines how labor law structures worker organizing and collective bargaining efforts. Focus on labor/management relations in such processes as contract administration, workplace anti-discrimination efforts, and labor organizing rights. Explore new developments like labor law in relations to social media usage and independent contracting. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5550 - Labor, Trade Unions and the Global Economy (3 Credits)
Examines transnational trade unionism amid the global economy, with an emphasis on trade unions in a comparative perspective. How do labor activists and trade unions strive to establish institutions and mechanisms to assert worker rights and power in today's international political-economy? Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.
Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5555 - International Women's Resistance (3 Credits)
Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4555, WGST 4555/5555 and ETST 4555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5610 - Seminar: Middle East Politics (3 Credits)
Examines the Middle East regional system and the region's role in world politics. Investigates questions regarding politics in Iran, Iraq, Palestinian-Israeli relations, political Islam, and relations with the United States. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5615 - Seminar: Chinese Development (3 Credits)
Discussion of readings about China. Analysis of several of the following: party-government relations, ideology and political behavior, leadership, diplomacy, political and economic development and post-Mao reforms. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5726 - Seminar on U.S. and China Relations (3 Credits)
Detailed examination of historical context and current issues in U.S./China relations. Emphasis on modern period, with particular attention to changing relations in context of rising power of China. Cross-listed with PSCI 4726. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5747 - Legal Reasoning and Writing (3 Credits)
Introduces the fundamentals of legal reasoning and legal argumentation through intensive class discussion, formal debate and writing. Attention is given to the relationship between case and statutory law and their application in trial and appeals courts in the United States. Cross-listed with PSCI 4757, COMM 4750, 5750. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5807 - Seminar: Conflict Behavior and the Politics of Violence (3 Credits)
Theoretical and empirical analysis of conflict behavior with special emphasis on the explanation of political violence. Revolution, international warfare, and urban unrest are studied as forms of political violence, and the role of systematic empirical research is emphasized in the development of general theories of intergroup conflict. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5808 - Strategies of Peacebuilding (3 Credits)
The course investigates the theories and strategies of peacebuilding in societies that have endured intrastate conflict and/or massive human rights violations and asks whether peace and justice and democracy can or should work together and how forgiveness and reconciliation might develop. Cross-listed with PSCI 4808. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5837 - Contemporary Issues in Civil Liberties (3 Credits)
Conflicting rights of individuals and groups in several areas of civil liberties, including religious groups, free speech, sexual freedom, racial quotas, and anti-governmental actions and publications. This course includes case law, readings, guest speakers and case discussions. Cross-listed with PSCI 4837. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5840 - Independent Study: PSCI (1-3 Credits)
Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5878 - War, Film, & International Law (3 Credits)

This course examines interactions of culture, politics, and law by chronologically investigating 20th-century war movies and the ways experiences and norms have shaped and been shaped by cinematic representations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4878. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5914 - Community Organizing and Community Development (3 Credits)

The theory and practice of community organizing strategies and community development innovations. How can social activists build power at the grassroots to build equitable, sustainable, and healthy communities? Cross-listed with PSCI 4914. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing or permission of the instructor.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5944 - CU in the City (3 Credits)

Investigation of community development strategies through seminar discussions, urban walking tours, and student field placement with a local community based organization, non-profit, or public office engaged in community development work. Cross-listed with PSCI 4944. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

PSCI 5960 - Master's Project (1-3 Credits)

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

PSCI 5995 - Global Study Topics (1-3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing or permission of the instructor. Cross-listed with PSCI 4995. Term offered: summer. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

New Directions in Public, Non-Profit and Community Leadership, Political Science, MA

Graduate School Policies and Procedures (p. 59) apply to this program.

Director: Dr. Steve DelCastillo

E-mail: steve.delcastillo@ucdenver.edu

Please click [here](#) (p. 376) to see Political Science department information.

The Public, Non-profit and Community Leadership track of the political science MA program is offered off-campus through the Center for New Directions. The Center for New Directions offers an MA program focused on public leadership, community labor organizing, and social economy innovations, in collaboration with community and labor organizations and local government jurisdictions across Colorado. The program seeks to develop the public leadership & community organizing capacities necessary to address challenges and leadership & community organizing capacities necessary to address challenges and opportunities within neighborhoods, communities, government jurisdictions, and non-profit entities.

In addition to their standard coursework, students in this Master's program are encouraged to be involved in experiential learning through professional internships, community-based action research opportunities, and other practicums made available to students through the program's many university-community partnerships, including the possibility of full-time, salaried internships with rural and small jurisdictions across Colorado. Through partnerships with government jurisdictions across the state, and with non-profits and community-based organizations, New Directions seeks to build community power and identify policy solutions to local challenges.

This program presents courses in an intensive weekend format, allowing students to complete their masters entirely through weekend or online courses.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor to confirm the best plans of study before finalizing them.

Certificate Program

The Center for New Directions MA program offers two certificate programs:

- Public, Non-Profit and Community Leadership (p. 390)
- Labor Leadership Certificate (p. 389)

These certificate programs allow students to focus their studies in a particular direction and to note that particular focus on their transcript. Students do not have to be seeking a full Master's degree to earn a certificate of completion through the certificate program.

For more information on these graduate certificates, click the links above.

Degree Requirements

1. Students must complete a total of 33 PSCI graduate credit hours to complete the MA degree.
2. Students must complete a minimum of 33 graduate level (5000-level or higher) PSCI credit hours.
3. Students must earn a minimum grade of B- (2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded attempts in required and elective courses are calculated in the masters GPA. Students cannot complete the masters or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. Previously earned graduate credit may be submitted for approval to satisfy up to nine hours of the supportive elective requirement. The elective courses offered may change from time to time based on needs, interests and other factors.

Course Format

All courses are offered in a weekend format that consists of three weekend sessions for a given course, spread out over a two or three month period. Weekend classes are held from 9:00 am to 4:00 pm on both Saturday and Sunday of each weekend session. In most cases, a student will complete all of the weekend sessions of one course before starting the weekend sessions for the next course. There is typically a two to three week break between each weekend of class-time in a given course.

Required Core Courses

Code	Title	Hours
<i>Take the following</i>		6
PSCI 5468	Research Methods in Political Science	3

PSCI 5914	Community Organizing and Community Development	3

Electives

Elective courses in the New Directions program are offered in three different "tracks" of study, allowing students to choose their particular interest and focus their studies on that subject. The three tracks are: Local Governance, Community and Labor Organizing, and The Social Economy and Sustainable Development.

Students are encouraged to focus their studies by taking courses within a chosen track, but it is *not* required that students only take courses within a single track (and some courses fit in more than one track).

1. **Local Governance:** Curriculum focuses on educating students who are interested in working in local and state government sectors, or with public policy research and advocacy organizations. Curriculum and community partnerships in this area focus on local government and administration, the politics of government finance, state politics and public policy challenges.
2. **Community and Labor Organizing:** Curriculum focuses on developing diverse theoretical and practical courses in labor and community organizing politics, history and strategies. Courses focus on social movement theories, labor union politics, and community organizing strategies to help students develop theoretical foundations and practical strategies for more effective community and labor leadership.
3. **The Social Economy and Sustainable Development:** Curriculum focuses on developing an understanding of the current political-economic systems, and on exploring alternative and diverse economic strategies that might work to the benefit of less privileged communities. Courses and community partnerships allow students to explore democratic financial systems, land trusts, and worker cooperatives, and other such innovative "social economy" practices, at the local, national and global levels. In this track, students will learn of diverse economies theory, innovative economic development strategies in both rural and urban areas, the worker cooperative movement, and innovative financial strategies that work for less privileged communities.

Code	Title	Hours
<i>Complete 24 credits</i>		24
Below is a list of some regularly offered elective courses in the New Directions program.		
PSCI 5009	Politics of the Budgetary Process	3
PSCI 5014	Seminar: American Politics	3
PSCI 5024	State Politics: Focus on Colorado	3
PSCI 5075	Gentrification and Social Equity	3
PSCI 5084	Local Government and Administration	3
PSCI 5085	Comparative Governance: Environment and Society	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5265	Social Justice And Globalization	3
PSCI 5274	Conflict Resolution and Public Consent Building	3
PSCI 5354	Seminar: Environmental Politics and Policy	3
PSCI 5414	Non-Profits and Social Change	3
PSCI 5424	The Social Economy and Sustainable Development	3
PSCI 5434	The Cooperative Movement: Politics and Policy	3

PSCI 5457	American Political Thought	3
PSCI 5545	Immigration Politics	3
PSCI 5548	Labor Law and Collective Bargaining	3
All courses in our graduate catalog are available to be offered as electives in the New Directions program.		
PSCI 5000	State of the Discipline	3
PSCI 5008	Graduate Topics in Political Science	1-3
PSCI 5011	GIS in Political Science	3
PSCI 5013	Philosophical Problems in the Social Sciences	3
PSCI 5025	Local Governance and Globalization	3
PSCI 5044	The Presidency	3
PSCI 5054	The Legislative Process	3
PSCI 5057	Religion and Politics	3
PSCI 5094	Seminar: Urban Politics	3
PSCI 5105	Comparative Politics: Europe	3
PSCI 5135	Seminar: Political Economy of Latin America	3
PSCI 5145	Indigenous Politics	3
PSCI 5176	Gandhi's Legacy: Non-Violent Resistance Today	3
PSCI 5216	Seminar: International Relations	3
PSCI 5217	Human Rights in Theory and Practice	3
PSCI 5224	Dictatorships in 21st Century	3
PSCI 5225	Democracy and Democratization	3
PSCI 5236	Seminar: American Foreign Policy	3
PSCI 5238	Seminar: Comparative Foreign Policy	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5256	Seminar: National Question and Self-Determination	3
PSCI 5266	International Law	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5286	International Relations: War or Peace?	3
PSCI 5326	Advanced International Political Economy: Globalization	3
PSCI 5365	Global Ecological Crises	3
PSCI 5446	Advanced Indigenous Peoples' Politics	3
PSCI 5477	The U.S. Constitution: Law and Politics	3
PSCI 5535	Labor and Working Class Politics	3
PSCI 5550	Labor, Trade Unions and the Global Economy	3
PSCI 5555	International Women's Resistance	3
PSCI 5610	Seminar: Middle East Politics	3
PSCI 5615	Seminar: Chinese Development	3
PSCI 5726	Seminar on U.S. and China Relations	3
PSCI 5747	Legal Reasoning and Writing	3
PSCI 5807	Seminar: Conflict Behavior and the Politics of Violence	3
PSCI 5808	Strategies of Peacebuilding	3
PSCI 5837	Contemporary Issues in Civil Liberties	3
PSCI 5840	Independent Study: PSCI	1-3
PSCI 5878	War, Film, & International Law	3
PSCI 5880	Directed Research	1-6
PSCI 5944	CU in the City	3

Project Requirement

Code	Title	Hours
<i>All students are required to complete a 3-credit master's project under the direction of a faculty advisor. Registration is done using the Special Processing form, rather than online.</i>		3
PSCI 5960	Master's Project	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/polisci/graduate/>).

Political Science, MA

Graduate School Policies and Procedures (p. 59) apply to this program

Director: Michael Berry

E-mail: michael.berry@ucdenver.edu

Please click here (p. 376) to see Political Science department information.

Introduction

The Political Science Department offers a Master of Arts (MA) degree in Political Science with an emphasis on building academic and practical skills in key areas of the discipline. Research and teaching in the department centers on the major fields of American politics, comparative politics, international relations, political theory and public policy. The department also offers more specialized training in community organizing, human rights, legal studies, gender politics, race and ethnic politics, European studies, indigenous politics and urban politics. Students pursuing the MA have the option of completing the traditional track or an "alternative" track centered on public, non-profit and community leadership. Students completing the alternative "public, non-profit and community leadership" track take most courses in weekend, off-campus locations. Students completing either track have gone on to PhD programs across the country and work in a variety of areas, including: state and local elected office, government service, community organizing and development work, nongovernmental organizations, legislative analysts, UN affiliates, lobbyists, teachers, media analysis and political consulting.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor to confirm the best plans of study before finalizing them.

Alternative Political Science Master's Program: The New Directions Program

In addition to its traditional, on-campus Master's degree, the Political Science Department offers a Public, Non-Profit and Community Leadership MA program through the Center for New Directions. The Center for New Directions offers an MA program focused on 1) public leadership; 2) community and labor organizing; and/or 3) political and social economy innovations. These options are carried out in collaboration with local government jurisdictions, community and labor organizations, and advocacy groups across Colorado. The program develops public leadership & community organizing competencies for addressing social, economic, and political challenges within Colorado communities and regions.

Plan II is available both under the traditional MA track offered on the Denver campus, as well as through an alternative track offered off-campus through the Center for New Directions in Politics and Public Policy. For details about this off-campus track in politics and public policy, see New Directions, MA in Political Science (p. 384).

The Political Science graduate program offers two transcripted certificates, allowing students to focus their studies within a specific track (Public, Non-Profit, and Community Leadership; Labor Leadership; and Political and Social Economy and Innovation) and an option to have the track courses listed on their transcript. Students do not need to be seeking a full Master's degree to earn a certificate of completion through the Graduate Certificate program. These Graduate Certificates can be obtained in one of three areas: 1) Public, Non-Profit and Community Leadership; and 2) Labor Leadership.

- Public, Non-Profit and Community Leadership (p. 390)
- Labor Leadership (p. 389)

For more information on these graduate certificates, click the links above.

Degree Requirements

1. Students must complete 33 PSCI credit hours.
2. Students must complete a minimum of 33 graduate (5000-level or higher) PSCI credit hours.
3. Students must earn a minimum grade of B- (2.7) in all masters courses taken at CU Denver and must achieve a minimum cumulative masters GPA of 3.0. All graded attempts in required and elective courses are calculated in the masters GPA. Students cannot complete masters or ancillary course requirements as pass/fail.
4. Students must complete a minimum of 16 credits with CU Denver Political Science faculty.

Program Restrictions, Allowances and Recommendations

1. Students who are on probation must meet regularly with the graduate advisor and must secure approval from the advisor for all course work while on probation.
2. In addition to the requirements for admission and details of the program spelled out here, graduate students in political science must also abide by department rules and procedures specified in the Graduate School Policies and Procedures (p. 59). Failure to meet these policies may result in a student being dropped from the program.
3. The total combination of independent study, graduate course work in related disciplines and internships cannot exceed 9 semester hours.
4. Under the On-Campus MA program in political science, two degree plans are available:
 - a. Plan I requires the completion of nine graduate courses (27 semester hours) and a 6-credit thesis
 - b. Plan II requires the completion of ten graduate courses (30 semester hours) and a 3-credit project or portfolio.

Required Core

Code	Title	Hours
<i>Take the following</i>		6
PSCI 5000	State of the Discipline	3
PSCI 5468	Research Methods in Political Science	3

Elective Courses

Code	Title	Hours
<i>Students will complete 7-8 courses (21-24 credits), depending on whether they are working under Plan I or II. Elective courses must include at least one graduate seminar in each of the following three areas: American Politics, Comparative Politics/International Relations, and Political Theory.¹</i>		
PSCI 5008	Graduate Topics in Political Science	1-3
PSCI 5009	Politics of the Budgetary Process	3
PSCI 5011	GIS in Political Science	3
PSCI 5013	Philosophical Problems in the Social Sciences	3
PSCI 5014	Seminar: American Politics	3
PSCI 5024	State Politics: Focus on Colorado	3
PSCI 5025	Local Governance and Globalization	3
PSCI 5044	The Presidency	3
PSCI 5054	The Legislative Process	3
PSCI 5057	Religion and Politics	3
PSCI 5075	Gentrification and Social Equity	3
PSCI 5084	Local Government and Administration	3
PSCI 5085	Comparative Governance: Environment and Society	3
PSCI 5094	Seminar: Urban Politics	3
PSCI 5105	Comparative Politics: Europe	3
PSCI 5135	Seminar: Political Economy of Latin America	3
PSCI 5145	Indigenous Politics	3
PSCI 5176	Gandhi's Legacy: Non-Violent Resistance Today	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5216	Seminar: International Relations	3
PSCI 5217	Human Rights in Theory and Practice	3
PSCI 5224	Dictatorships in 21st Century	3
PSCI 5225	Democracy and Democratization	3
PSCI 5236	Seminar: American Foreign Policy	3
PSCI 5238	Seminar: Comparative Foreign Policy	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5256	Seminar: National Question and Self-Determination	3
PSCI 5265	Social Justice And Globalization	3
PSCI 5266	International Law	3
PSCI 5274	Conflict Resolution and Public Consent Building	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5286	International Relations: War or Peace?	3
PSCI 5326	Advanced International Political Economy: Globalization	3
PSCI 5354	Seminar: Environmental Politics and Policy	3
PSCI 5365	Global Ecological Crises	3
PSCI 5414	Non-Profits and Social Change	3
PSCI 5424	The Social Economy and Sustainable Development	3
PSCI 5434	The Cooperative Movement: Politics and Policy	3
PSCI 5446	Advanced Indigenous Peoples' Politics	3
PSCI 5457	American Political Thought	3
PSCI 5477	The U.S. Constitution: Law and Politics	3
PSCI 5535	Labor and Working Class Politics	3
PSCI 5545	Immigration Politics	3
PSCI 5548	Labor Law and Collective Bargaining	3

PSCI 5550	Labor, Trade Unions and the Global Economy	3
PSCI 5555	International Women's Resistance	3
PSCI 5610	Seminar: Middle East Politics	3
PSCI 5615	Seminar: Chinese Development	3
PSCI 5726	Seminar on U.S. and China Relations	3
PSCI 5747	Legal Reasoning and Writing	3
PSCI 5807	Seminar: Conflict Behavior and the Politics of Violence	3
PSCI 5808	Strategies of Peacebuilding	3
PSCI 5837	Contemporary Issues in Civil Liberties	3
PSCI 5840	Independent Study: PSCI ¹	1-3
PSCI 5878	War, Film, & International Law	3
PSCI 5880	Directed Research ¹	1-6
PSCI 5914	Community Organizing and Community Development	3
PSCI 5939	Internship ¹	1-6
PSCI 5944	CU in the City	3

¹ Please see the Department graduate director, if you have questions as to which category a course might fit under.

In addition to taking regularly offered graduate seminars in the program, students may meet their elective requirements by taking independent study, internships, or graduate courses in related disciplines. These courses all require approval from the Graduate program director, or from a sponsoring faculty member in the Department. The total combination of independent study, graduate course work in related disciplines and internships cannot exceed 9 semester hours.

Thesis/ Project/ Portfolio

Code	Title	Hours
<i>Complete one of the following</i>		3-6
Plan I requires the completion of nine graduate courses (27 semester hours) and a 6-credit thesis		
PSCI 5950	Master's Thesis	6
Plan II requires the completion of ten graduate courses (30 semester hours) and a 3-credit project or portfolio.		
PSCI 5960	Master's Project	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/polisci/graduate/>).

Political Science MA / Master of Business Administration (MBA) Dual Degree

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

In the 21st century, the fields of business administration and political science intersect, in that sustainable business development requires an understanding of the political environment, while political theory and practice must address the role of the business community in economic development. Providing students with both the business foundation and

political knowledge enhances their ability to succeed in our ever-changing political world.

The CU Denver Master of Arts in Political Science (MA) degree offers an in-depth understanding of the political environment, locally, nationally and globally, emphasizing the development of academic and practical skills in key areas of the discipline, and centering on the major fields of American politics, comparative politics, international relations, political theory and public policy. The CU Denver Master of Business Administration (MBA) degree provides a strong foundation in business knowledge in such areas as organizing teams, developing marketing plans, using data analysis and technology in decision making, economics, financial management and strategic planning. The MBA develops skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political and economic environment.

The Dual Master's Degree in Political Science (MA) and Business Administration (MBA) is designed for students whose interests overlap business and politics or business and international affairs. This program is jointly sponsored by the Department of Political Science of the College of Liberal Arts and Sciences and the Business School. This program enables students to simultaneously earn an MA in Political Science with an MBA.

The dual degree program provides a more comprehensive education to the next generation of professionals in the non-profit sector, corporate arena and governmental organizations. Dual degree students are able to complete both degree programs in less time, and with fewer total credit hours (66 for both), than if both degrees were pursued separately (48+33 = 81). The program keeps the core of each program intact, including some electives from both programs, and enables students to choose two additional electives from either business or political science to best suit their career and personal goals. Furthermore, the interactions between the students enrich the students in both programs, as well as the organizations that employ them.

Admission Requirements

Students must apply separately to, meet the admission requirements of, and be accepted by each program. It is possible for students currently admitted to one program to learn about the dual degree and choose to apply after admission to the other program.

GPA Requirements

Students must maintain a cumulative GPA of 3.0 or higher across all courses that are applied to the dual degree. Any political science course in which a student receives a final grade lower than B- cannot be counted toward the total credits for the dual degree. Any business course in which a student receives a final grade lower than C cannot be counted toward the total credits for the dual degree. All graduate courses will be included in the cumulative GPA.

Transfer Credits

No more than 9 semester hours of business credits from an AACSB Business School with a grade of B or better and no more than 6 semester hours of political science credits may be transferred into this dual degree program. The Business School will evaluate transfer hours in business and the Political Science Department will evaluate transfer hours in political science.

Graduation

Students must complete all the requirements for both programs before they apply to graduate, and must apply to graduate in the same term for both programs.

Degree Requirements

Code	Title	Hours
MBA Core		
BUSN 6520	Leading Individuals and Teams	3
BUSN 6530	Data Analytics for Managers	3
BUSN 6540	Legal and Ethical Environment of Business	3
BUSN 6550	Analyzing and Interpreting Accounting Information	3
BUSN 6560	Marketing Dynamics in the 21st Century	3
BUSN 6610	Information Systems Strategy	3
BUSN 6620	Applied Economics for Managers	3
BUSN 6630	Management of Operations	3
BUSN 6640	Financial Management	3
BUSN 6710	Strategic Management	3
International Elective		
Select one of the following:		3
Any course numbered 6000 or higher with the INTB prefix		
ENTP 6826	International Entrepreneurship	
Any graduate-level business course that is cross-listed with an INTB prefix. Travel study offered by the Business School will also apply.		
Political Science Core		
PSCI 5000	State of the Discipline	3
PSCI 5468	Research Methods in Political Science	3
Graduate Seminar in American Politics subfield		3
Graduate Seminar in Comparative or International Politics subfield		3
Graduate Seminar in Political Theory subfield		3
PSCI 5950	Master's Thesis	3-6
or PSCI 5960	Master's Project	
Political Science Electives		
PSCI graduate seminars (must complete 6 hours if thesis, or 9 hours if project from Political Science Core)		6-9
Free Electives		
Courses must be from either the Business School or Political Science department, meeting the descriptions below. A combination of both is also acceptable.		6
Business Free Electives: Any course numbered 6800 or higher with a BUSN prefix or any course numbered 6000 or higher with a prefix of ACCT, DSCI, ENTP, FNCE, HLTH, INTB, ISMG, MGMT OR MKTG		
Political Science Electives: Any course numbered 5000 or higher with a PSCI prefix		
Total Hours		63-69

Labor Leadership Certificate

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Please click here (p. 376) to see Political Science department information.

The Labor Leadership certificate is meant to develop the next generation of leaders in labor unions and civic organizations focused on labor and related issues of race, class and gender equity. The certificate is particularly relevant to labor union leaders, rank and file members, and community-based organizational staff who desire to receive continuing education regarding labor leadership. The labor leadership certificate will combine academic instruction with field learning and community-based research projects. The program features active partnerships with local labor organizations, such as unions and community-based groups focused on relevant labor, class and race issues (such as immigrant rights groups, workplace gender equity groups, etc.). Certificate students will join a diverse group of graduate students pursuing their full Master's degree in the Department's community leadership program (including students focused on governmental/public leadership, and students focused on non-profit leadership) which will enhance synergetic learning in the classroom, and enlarge networking opportunities among all students.

The certificate is open to non-degree seeking as well as students formally admitted to the MA in Political Science program. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor to confirm the best plans of study before finalizing them.

Admissions and Declaring this Certificate

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Steve DelCastillo) or with the Director of the On-campus Graduate Program (Dr. Michael Berry), in order to register their intent to pursue the Labor Leadership Certificate and to develop a curriculum plan.

Program Requirements

1. Students must complete a minimum of 15 PSCI credit hours.
2. Students must complete a minimum of 15 graduate (5000-level or higher) PSCI credit hours.
3. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Required Courses

Code	Title	Hours
<i>Take all of the following courses</i>		9
PSCI 5535	Labor and Working Class Politics	3
PSCI 5548	Labor Law and Collective Bargaining	3
PSCI 5550	Labor, Trade Unions and the Global Economy	3

Elective Courses

Code	Title	Hours
<i>Take two of the following courses</i>		6
PSCI 5326	Advanced International Political Economy: Globalization	
PSCI 5424	The Social Economy and Sustainable Development	
PSCI 5434	The Cooperative Movement: Politics and Policy	
PSCI 5914	Community Organizing and Community Development	

To learn more about the Student Learning Outcomes for this program, please visit our website (https://clas.ucdenver.edu/newdirections/certificates/labor-leadership-certificate/#graduate_level_learning_outcomes_for_the_labor_leadership_certificate-58).

Public, Nonprofit and Community Leadership Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program

Introduction

Please click here (p. 376) to see Political Science department information.

The Public, Non-Profit and Community Leadership Graduate Certificate is offered in two different formats: the traditional, on-campus format, and the New Directions weekend classes format, with classes offered in CU Denver facilities south of Denver (currently at the Liniger Building in Parker). Students can choose classes in either of these two formats to complete the certificate.

The CU Denver Political Science Department's Public, Non-Profit and Community Leadership Certificate engages students in a focused curriculum in the local public leadership, and in the community organizing and development field, including field placements in internships with local community partners. The certificate is tailored to meet the needs of individuals in public and non-profit positions that require development of their leadership competencies and for individuals in informal community leadership positions who want to build their knowledge, skills, and effectiveness.

The program curriculum is anchored around the study and practice of local civic engagement, especially in traditionally marginalized communities. Students will be connected to meaningful work and networking opportunities in local government or in community settings, through community-based coursework, professional internships and service-learning opportunities. The certificate program provides critical education and effective skills-based training for students seeking careers in local government, in non-profit organizations, or in community organizing and development work. Students will be prepared to become change agents in their communities, while developing possible career

paths in community-based advocacy/service organizations, public agencies, or international development work.

The certificate is open to non-degree seeking students (with or without an undergraduate degree) as well as students formally admitted to the MA in Political Science and to upper division undergraduates seeking to get a head start on their graduate studies. The Certificate can be earned as a stand-alone University certificate, or it can be applied to a current or future degree program. Non-degree seeking students who successfully complete the certificate program would be allowed to transfer in the credits received in the certificate program to complete the Master's Degree in Political Science.

The certificate can be earned either through our traditional on-campus graduate seminars, or entirely through classes offered in a weekend-intensive format in our New Directions graduate program. Students may take classes in either format desired.

These requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their faculty advisor to confirm the best plans of study before finalizing them.

Admissions and Declaring This Certificate

Any current or potential student wishing to declare this certificate should schedule a certificate advising appointment with either the Director of the New Directions graduate program (Dr. Steve DelCastillo) or with the Director of the On-campus Graduate Program (Dr. Michael Berry), in order to register their intent to pursue the Community Leadership Certificate and to develop a curriculum plan.

Program Requirements

1. Students must complete a minimum of 12 PSCI credit hours.
2. Students must complete a minimum of 12 graduate (5000-level or higher) PSCI credit hours.
3. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Required Course

Code	Title	Hours
<i>Take the following</i>		3
PSCI 5914	Community Organizing and Community Development	3

Field Placement

Code	Title	Hours
<i>Take one of the following</i>		3
PSCI 5939	Internship	3
PSCI 5944	CU in the City	3

Public and Community Leadership Elective Courses

Code	Title	Hours
<i>Take two of the following</i>		6
PSCI 5008	Graduate Topics in Political Science (when relevant and approved by Program Advisor)	
PSCI 5024	State Politics: Focus on Colorado	
PSCI 5025	Local Governance and Globalization	
PSCI 5075	Gentrification and Social Equity	
PSCI 5084	Local Government and Administration	
PSCI 5094	Seminar: Urban Politics	
PSCI 5206	Social Movements, Democracy and Global Politics	
PSCI 5265	Social Justice And Globalization	
PSCI 5274	Conflict Resolution and Public Consent Building	
PSCI 5414	Non-Profits and Social Change	
PSCI 5424	The Social Economy and Sustainable Development	
PSCI 5434	The Cooperative Movement: Politics and Policy	
PSCI 5548	Labor Law and Collective Bargaining	
PSCI 5555	International Women's Resistance	
PSCI 5840	Independent Study: PSCI (when relevant and approved by Program Advisor)	

Public Leadership Course credits may also be earned through study abroad in the Semester in Berlin program or the Development in East Africa program.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/newdirections/certificates/graduate-certificate-public-non-profit-community-leadership-certificate/>).

Psychology

Chair: Peter S. Kaplan

Administrative Assistant: Kimberly Hill

Director, Clinical Health Psychology Ph.D. Program: Amy Wachholtz

Coordinator of Clinical Training: Athena Baca-Chieza

Program Assistant: Anne Beard

Director, Psychological Services Center: Athena Baca-Chieza

Office: North Classroom, 5002

Telephone: 303-315-7050

Fax: 303-315-7072

Website: <https://clas.ucdenver.edu/psychology/>

Overview

Psychology is the scientific study of behavior, consisting of the following major areas of study: experimental psychology, biopsychology, animal behavior, developmental psychology, social psychology, cognitive psychology, personality, industrial/organizational psychology and abnormal psychology.

Graduate Program

The Psychology department offers a Master of Arts (MA) degree in Psychology with an emphasis in clinical psychology that is earned en route to the doctor of philosophy (PhD) degree in Clinical Health Psychology. Our program trains students within the context of the scientist-practitioner model. That is, we value an integrated approach

to both the science and practice of clinical psychology. Our training emphasizes the contribution of research to the understanding, treatment and prevention of human problems, and the application of knowledge that is grounded in scientific evidence.

Admissions

The application deadline for receipt of all student information is November 15 for the following fall. You are responsible for making sure all materials are in on time. International students should be sure to submit all materials at least two weeks before this deadline (by November 1) so that they arrive at our department on time.

Admission Requirements

- BA or BS from an accredited college or university, with a minimum GPA of 3.5 based on all college course work.
- Undergraduate courses at an accredited institution with a grade of 80% (B-) or higher in: introductory psychology, psychological statistics, research methods history of psychology and abnormal psychology. Additional courses in psychology are highly desirable; our admissions committee will also look favorably upon courses in the biological and physical sciences.
- Two official transcripts from each college and university attended.
- Graduate Record Exam (GRE): The GRE General Test (verbal, quantitative, analytical writing) is required. Most students in the program had a combined verbal and quantitative score of at least 1100 on the old GRE scoring system. The GRE should be taken at least six weeks before the November 15 deadline so that the scores arrive on time.
- Three letters of recommendation, at least two of which must be academic references. Applicants provide contact information for their references in the online application. Those individuals are automatically contacted electronically and asked to upload their recommendations directly to your application file.
- The online Graduate Application, including your resume/vita and personal statement.
- Application fee of \$50 (\$75 for international students).

Programs

- Psychology, Clinical Health Psychology, PhD (p. 396)

Faculty

Professors:

Richard Allen, PhD, University of North Carolina at Chapel Hill

James Grigsby, PhD, University of Colorado

Mitchell M. Handelsman, PhD, University of Kansas

Peter S. Kaplan, PhD, Indiana University

Kevin S. Masters, PhD, Brigham Young University

Associate Professors:

David Albeck, PhD, University of Colorado

Elizabeth Sandlin Allen, PhD, University of North Carolina at Chapel Hill

Joy L. Berrenberg, PhD, University of Colorado

Sondra Bland, PhD, University of Texas

Kristin Kilbourn, PhD, University of Miami

Erik Oleson, PhD, Wake Forest University

Krista W. Ranby, PhD, Arizona State University

Amy Wachholtz, PhD, Bowling Green University

Jason Watson, PhD, Washington University

Michael Zinser, PhD, University of Wisconsin, Madison

Assistant Professors:

Benjamin Greenwood, PhD, University of Colorado, Boulder

Carly Leonard, PhD, Johns Hopkins University

Jonathan Schaffer, PhD, St. John's University

Sneha Thamocharan, PhD, Texas A&M University

Associate Professors, Clinical Teaching Track:

Joan Bihun, PhD, Wayne State University

Kevin Everhart, PhD, University of South Carolina

Assistant Professor, Clinical Teaching Track:

Vivian Shyu, PhD, University of Denver

Senior Instructor:

Athena Baca-Chieza, PsyD, Chicago School of Professional Psychology

Bethann Bierer, PhD, University of Denver

Emeritus Professors:

Rick M. Gardner, PhD, University of Nevada

Barbara Walker, PhD, The Ohio State University

Psychology (PSYC) Courses

PSYC 5164 - Psychology of Perception (3 Credits)

Studies sensory processes and perceptual variables. Covers processes related to vision, audition, gustation and olfaction. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 4164. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5263 - Hormones and Behavior (3 Credits)

The hormonal regulation of behavior will be the primary focus of this course. Topics include: hormonal basis of sexual differentiation and behavioral differences, parental behavior, biological rhythms, aggression, mood and stress. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3263. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5264 - Exercise, Brain and Behavior (3 Credits)

This course explores the impact of physical activity status-being sedentary or physically active-on brain function and behavior. Topics include effects of exercise on cognitive function, mood disorders, stress, anxiety, sleep and drug addiction. Emphasis will be placed on understanding the neurobiological mechanisms by which exercise impacts behavior. Students who have received credit for this topic listed under PSYC 3600 may not receive credit for this course. Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing. Term offered: fall. Cross-listed with PSYC 3264. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

Typically Offered: Fall.

PSYC 5265 - Drugs, Brain and Behavior (3 Credits)

Explores the pharmacological, biological, and behavioral basis of drug effects. Topics include mechanisms of drug action, brain reward pathways, role of environment and history on drug effects, and the impact of science on drug abuse and medication development. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Term offered: fall, spring, summer. Cross-listed with PSYC 3265. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5803 - Principles of Psychological Testing (3 Credits)

Principles underlying construction, validation, and use of tests of ability, intelligence, and personality and of attitude surveys. Covers statistical topics such as content and construct validity, item analysis, and reliability analysis. Prereq: Admission to psychology graduate program. Cross-listed with PSYC 4803. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 5822 - Aging, Brain and Behavior (3 Credits)

Examines the aging process, behavioral changes during senescence and the accompanying changes in the aged brain. Changes that are part of healthy aging are studied, as will age-related brain disorders. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3822. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5840 - Independent Study: PSYC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PSYC 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 5990 - Topics in Psychology (1-3 Credits)

Advanced study of special topics to be selected by the instructor. Note: May be repeated for credit. Prereq: Permission of instructor. Cross-listed with PSYC 4990. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 6200 - Developmental Psychopathology (3 Credits)

The study and prediction of maladaptive behaviors and processes across time. Students develop a sophisticated understanding of important concepts related to emotional and behavioral problems in children and adolescents, including DSM-IV-TR diagnostic criteria and the basic tenets of successful intervention. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 6840 - Independent Study (1-3 Credits)

A structured experience, planned and implemented with the assistance of a sponsoring faculty member in ongoing programs of research or other scholarly activity. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the graduate program in psychology. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6841 - Independent Study: PSYC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

PSYC 6910 - Research Practicum (3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6930 - Clinical Internship (1-6 Credits)

Clinical experience in a setting which provides supervision by qualified professionals. Students participate in assessment, intervention, and/or evaluation and research. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Completion of 24 hours of course work in the UCD Psychology MA, Clinical program. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

PSYC 7144 - Advanced Cognition and Emotion (3 Credits)

Overview of contemporary psychological theories and research in human learning, memory, cognition, and emotion. Emphasis on cognitive and affective neuroscience and the physiological-psychological organization of functional systems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7205 - Advanced Developmental Psychology (3 Credits)

A survey of neurobiological, cognitive, social and cultural processes in human development from conception through adulthood. Prereq: Admission to the Psychology MA, Clinical program or Clinical Health Psychology Ph.D. program or with permission of instructor and a graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Admission to the Clinical Health Psychology Ph.D. Program or with Permission of instructor and Graduate program director

PSYC 7220 - Advanced Biological Bases of Behavior (3 Credits)

Survey course of advances in psychobiology which inform our understanding of the brain and behavior with special emphasis on perception, action, and cognition. A major goal of the course is to foster appreciation of the importance of interdisciplinary research. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7262 - Health Psychology I (3 Credits)

Part I of a 2-course sequence. Presents crucial aspects of health psychology and behavioral medicine, including theoretical models, anatomy and physiology epidemiology, health promotion and primary prevention of medical problems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7350 - Psychotherapy I (3 Credits)

Surveys some of the major schools of psychotherapy, including cognitive and cognitive-behavioral therapies as well as motivational interviewing. Coverage also includes therapy techniques, process of therapy, and treatment-outcome research. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7360 - Psychotherapy II (3 Credits)

Theoretical approaches and techniques used in research, assessment and treatment of major forms of psychopathology, including anxiety, depression, schizophrenia and substance abuse, as well as marital problems and childhood disorders. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7400 - Child Assessment (3 Credits)

Psychometric theory and practice in assessment of children with focus on the diagnostics, the WISC-III, and personality assessment. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7410 - Assessment I: Personality (3 Credits)

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to psychosocial functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7420 - Assessment I: Intellectual and Cognitive Assessment (3 Credits)

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to cognitive functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7485 - Diversity in Clinical Psychology (3 Credits)

Designed to foster understanding of diversity and its implications for clinical practice, research, and mental health policy. Students will learn to orient to the worldviews of clients from diverse backgrounds and to tailor their interventions to competently serve individuals in a pluralistic society. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7490 - Topics in Health Psychology Summer Lecture Series (1-3 Credits)

Weekly lectures given by Clinical Health Psychology department faculty, advanced graduate students, alumni and area professionals on selected topics in the field. Note: This course is required for first, second and third-year graduate students. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7500 - Advanced Psychopathology (3 Credits)

Key features of major mental disorders in adult populations. Includes classification, DSM diagnosis, epidemiology, course and prognosis, age/culture/gender features, etiology and biological bases. Prereq: Admission to Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7511 - Historical and Philosophical Foundations of Psychology (3 Credits)

Philosophical and historical antecedents to contemporary psychology, with particular emphasis on clinical psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7520 - Experimental Psychopathology (3 Credits)

Theories of etiology of major psychopathologies, including: personality disorders, anxiety disorders, affective disorders, substance use disorders and schizophrenia and other psychoses. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7700 - Clinical Research Methods (3 Credits)

Principles of research methodology in clinical psychology. Major topics include research ethics, subject recruitment, ethnic and cultural considerations, selecting and evaluating research measures, epidemiology and comorbidity, taxonomic and outcome research and research design. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7710 - Multivariate Statistics (3 Credits)

Topics include multiple regression, logistic regression, factor analysis, and structural equation modeling. Both experimental and non-experimental designs will be considered. Students will learn underlying theory of these techniques as well as how to perform analyses using software like SPSS and Mplus. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7713 - Advanced Statistics (3 Credits)

Experimental design and analysis of controlled interventions and evaluations. Emphasis on multifactor analysis of variance, orthogonal contrasts, post-hoc tests, multiple regression, and analysis of covariance. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7730 - Ethics and Professional Issues in Psychology (3 Credits)

An in-depth exploration of the values and ethical ideas that guide professional practice in psychology, including philosophical ethical principles and professional codes of conduct. Specific topics include confidentiality, informed consent, competence, and respect for persons. Students are expected to be able to think about and communicate difficult ethical concepts in the form of class participation and a major paper. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7830 - Clinical Interviewing (1-3 Credits)

Students practice interviewing and develop skills, including the ability to listen actively, to critique their own work and the work of others, and to think carefully about issues that arise in clinical work with clients. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7910 - Clinical Practicum (1-3 Credits)

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 1 credit hour during year one (spring and summer semesters only) and 3 credit hours during years two (fall, spring, and summer semesters) and three (fall semester only). A total of 14 credit hours of PSYC 7910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 14 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 14.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7911 - Clinical Practicum II (1-6 Credits)

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8100 - Clinical Behavioral Medicine (3 Credits)

Presents basic assessment and psychotherapeutic techniques used for patients with various disorders, focusing on cognitive-behavioral methods and the unique needs of patients experiencing chronic disease. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8200 - Teaching Skills Workshop (3 Credits)

Students will learn, explore, and practice the basic principles and strategies of good teaching. We will also explore research and theory for teaching at the college level. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8262 - Health Psychology II (3 Credits)

Part II of a 2-course sequence. Further aspects of health psychology and behavioral medicine, including health service utilization, patient-provider relationships, social support, terminal illness and issues related to chronic disease states. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8501 - Primary Care Psychology (3 Credits)

Examines emerging trends in the role of professional psychology and psychologists serving as health care providers in primary care medical settings. Knowledge, skills and attitudes as they apply to competencies unique to primary care will be covered. Prereq: PSYC 7262 and PSYC 8262 and PSYC 7730 with a B- or higher. Restriction: Restricted to PSYH-PHD majors within the College of Liberal Arts and Sciences. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 7262 and PSYC 8262 and PSYC 7730 with a B- or higher

Restriction: Restricted to PSYH-PHD majors within the College of Liberal Arts and Sciences

PSYC 8502 - Cardiovascular Health Psychology (3 Credits)

The course focuses on research and clinical practice regarding psychological factors related to cardiovascular functioning and disease. The physiology of the cardiovascular system will be presented and primary and secondary prevention as related to psychological functioning will be emphasized. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8503 - Group Interventions in Health Psychology (3 Credits)

The course will serve as an introduction to group psychotherapy and group process principles with a focus on the design, implementation and delivery of evidence-based group interventions in the field of Clinical Health Psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8504 - Advanced Psychopharmacology (3 Credits)

In this course, we explore topics in psychopharmacology that builds upon psychopathology knowledge by identifying neurological and physiological pathways that affect cognition and psychological health and how these pathways are affected by pharmacology. The focus is on examining and critically analyzing conceptual, theoretical, and practical aspects of psychopharmacology and psychophysiology as well as how to apply these concepts to medically ill patients in psychotherapy. Restriction: Admission to the Clinical Health Psychology PhD program or with permission of instructor and graduate program director. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8550 - Advanced Social Psychology (3 Credits)

This is a graduate level seminar that broadly covers the social bases of behavior from a social psychological perspective. It includes discussion of topics such as group processes, attribution theory, discrimination, and perspectives on attitudes. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8910 - Advanced Clinical Practicum (1-4 Credits)

Advanced clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of health care settings to address the interface between physical and psychological functioning. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 3 credit hours during years three (spring and summer semesters only) and four (fall and spring semesters only). A total of 12 credit hours of PSYC 8910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8938 - Pre-Doctoral Internship (1-3 Credits)

Intensive full-time clinical experience with supervision by licensed, doctoral-level professionals. Interns participate in assessment, intervention, and/or evaluation and research in a variety of settings. Students apply through the Association of Psychology Postdoctoral and Internship Centers (APPIC) national matching process. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8990 - Doctoral Dissertation (1-10 Credits)

Independent research on the doctoral dissertation in Clinical Health Psychology. Prereq: Admission to the Clinical Health Psychology Ph.D. Program. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Psychology, Clinical Health Psychology, PhD

Graduate School Policies and Procedures (p. 59) apply to this program.

For more information about the Psychology department, please click here. (p. 391)

Objectives of the Program

Clinical health psychology focuses on the interaction between psychological, physiological, and environmental factors as they influence health and well-being. This emphasis includes focus on:

1. the development of effective disease prevention behavioral interventions for individuals and populations at high risk for medical problems; and
2. the development of strategies to help individuals who are already ill to manage their disease and to increase their ability to collaborate with medical professionals and improve their coping skills.

A clinical health psychologist combines expertise in research on health psychology with training in clinical psychology. Students in this program are trained to work within the community to use clinical psychological skills and techniques to diagnose and treat mental health conditions, promote health and prevent illness, apply behavioral interventions in the treatment of illness, and improve the health care system. In addition to course work, students acquire expertise in research by completing both a master's thesis and doctoral dissertation. They demonstrate competence in clinical assessment and intervention through several applied practicum experiences, successful passage of the Comprehensive Clinical Competency Examination and successfully completing a pre-doctoral psychology internship. Students can complete the program in five years and have up to eight years to complete the program according to Graduate School Policies and Procedures.

Financial Information

The University of Colorado Denver administers various forms of financial aid for graduate students: fellowships, scholarships and a number of awards from outside agencies. See the Office of Financial Aid for further information. Additionally, the psychology department offers teaching assistantships each year in such courses as introductory psychology, statistics, research methods and human development. Although we do not guarantee TA positions, we have been able to offer positions to our interested students.

Contingent upon the availability of grant money, faculty may also offer part-time research assistantships to qualified students. The typical RA position involves data collection and analysis, library research, etc. Some computer and statistical skills are usually required. RA positions are less available than TA positions, and they may arise on very short notice.

In-state tuition waivers and additional stipend monies may be available for doctoral students. We do guarantee to pay a full stipend, usually in the form of an assistantship, plus tuition for the first year. We will make every effort to do so for four years.

Note: Neither teaching nor research assistantships confer in-state tuition status.

Program Requirements

1. Students must complete a minimum of 97 PSYC credit hours.
2. Students must complete all credits at the graduate 6000-level and above.
3. Students must earn a minimum grade of B (3.0) in all courses taken at CU Denver and must achieve a minimum cumulative GPA of 3.0. All graded attempts in required and elective courses are calculated in the minor GPA. Students cannot complete program requirements as pass/fail.
4. Students must complete all credit hours with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. Courses are 3 units unless otherwise noted. 96 units are taken: 57 coursework, 26 clinical practicum, 4 thesis, 6 dissertation and 3 internship (1 unit in each of the 3 semesters of internship year).
2. Some courses are offered in alternating years or every other year so when they are taken depends on if a student entered the program in an even or odd numbered year.
3. Two electives are taken; the program offers Group Interventions in Health Psychology, Cardiovascular Health and Psychopharmacology. Outside elective(s) can be taken with the approval of the Program Director.
4. The program can be completed in 5 years but 6 years is the mean, median and mode for completion of programs of this sort. The Graduate School allows up to 8 years to complete the program, according to Graduate School Policies and Procedures (p. 59).
5. Students must successfully complete their doctoral dissertation proposal prior to applying for their internship in the 5th year and are strongly encouraged to defend their dissertation prior to beginning their internship.

Course Work

Required Courses

Code	Title	Hours
<i>Take all of the following</i>		54
PSYC 7144	Advanced Cognition and Emotion	3
PSYC 7205	Advanced Developmental Psychology	3
PSYC 7220	Advanced Biological Bases of Behavior	3
PSYC 7262	Health Psychology I	3
PSYC 7350	Psychotherapy I	3
PSYC 7360	Psychotherapy II	3
PSYC 7410	Assessment I: Personality	3
PSYC 7420	Assessment I: Intellectual and Cognitive Assessment	3
PSYC 7485	Diversity in Clinical Psychology	3
PSYC 7500	Advanced Psychopathology	3
PSYC 7700	Clinical Research Methods	3
PSYC 7710	Multivariate Statistics	3
PSYC 7713	Advanced Statistics	3
PSYC 7730	Ethics and Professional Issues in Psychology	3
PSYC 8100	Clinical Behavioral Medicine	3
PSYC 8200	Teaching Skills Workshop	3
PSYC 8262	Health Psychology II	3
PSYC 8550	Advanced Social Psychology	3

Electives

Code	Title	Hours
<i>Take six credits of the following</i>		6
PSYC 7400	Child Assessment	3
PSYC 7490	Topics in Health Psychology Summer Lecture Series	1-3
PSYC 7511	Historical and Philosophical Foundations of Psychology	3
PSYC 7520	Experimental Psychopathology	3
PSYC 7830	Clinical Interviewing	1-3
PSYC 8501	Primary Care Psychology	3
PSYC 8502	Cardiovascular Health Psychology	3
PSYC 8503	Group Interventions in Health Psychology	3
PSYC 8504	Advanced Psychopharmacology	3

Master's Thesis

The program has a provision for achieving a master's degree *en route* to obtaining the PhD. In addition to taking PSYC 8200 Teaching Skills Workshop, a master's degree is required for students to independently teach a course. During their time in the program, students' funding will likely require them to independently teach a course. Students must complete a master's thesis, an empirical research project that makes a significant contribution to the field. Although the thesis must address the student's own original question, the use of archival data and pilot studies is encouraged for this project.

Code	Title	Hours
<i>Take the following</i>		4
PSYC 6950	Master's Thesis	4

Clinical Practica

A minimum of 500 face-to-face intervention and assessment hours and 1200 total practicum hours [face-to-face intervention and assessment hours, plus supervision, plus support hours as defined by the Association of Psychology Postdoctoral and Internship Centers (APPIC)] are expected in preparation for application to pre-doctoral internships. Approximately 50% of required practica are typically conducted in medical settings. Sites for practica training, include the department's own Psychology Clinic and external facilities such as outpatient diabetes clinics, cancer clinics, OB/GYN, HIV/AIDS, end-stage renal disease, pain, and cardiovascular clinics, and in-patient psychiatric facilities. Students are able to select practica based on their personal and professional interests. All field placements are approved in advance by the Coordinator of Clinical Training.

Code	Title	Hours
<i>Take the following</i>		26
PSYC 7910	Clinical Practicum	14
PSYC 7911	Clinical Practicum II	6
PSYC 8910	Advanced Clinical Practicum	6

- Students should enroll in 1 credit hour during year one (spring and summer semesters only), 1 credit hour during year two (fall, spring, and summer semesters), and 3 credit hours during year three (fall, spring, and summer semesters). A total of 14 credit hours of PSYC 7910 Clinical Practicum are required.
- Students should enroll in 2 credit hours during year two (fall, spring, and summer semesters). A total of 6 credit hours of PSYC 7911 Clinical Practicum II are required.
- Students should enroll in 3 credit hours during year four (fall and spring semesters only). A total of 6 credit hours of PSYC 8910 Advanced Clinical Practicum are required.

Demonstration of Clinical Competency

During the first semester of their third year in the program students must demonstrate their clinical competency by completing the Comprehensive Clinical Competency Examination (CCCE). The CCCE is designed to facilitate student demonstration of clinical competence at the developmental level of readiness for application to clinical internship. This evaluation is designed to assess the developmentally appropriate broad and general clinical competencies in clinical psychology, and does not necessarily evaluate clinical health psychology competencies *per se*. The CCCE comprises three sequential components conducted in phases:

- Applied clinical diagnosis and assessment planning for a standardized patient.
- Case conceptualization and treatment planning for a standardized patient.
- Intervention therapy session with a standardized patient and oral defense with a faculty committee.

Dissertation

Students must complete a dissertation that involves original empirical work and is distinct from other research projects and publications. The dissertation proposal must be completed and defended prior to making application for the pre-doctoral internship. Students must have a dissertation committee composed of four members of the graduate faculty. When the dissertation is completed to the satisfaction of the

primary advisor, the student must orally defend the dissertation to the committee.

Code	Title	Hours
<i>Take the following</i>		
PSYC 8990	Doctoral Dissertation	6

Internship

Students must complete a 12-month, full-time pre-doctoral APA-accredited clinical internship. This internship is required of all clinical psychologists and is the capstone of clinical training in the doctoral program.

Code	Title	Hours
<i>Take the following</i>		
1 unit in each of the 3 semesters of internship year.		
PSYC 8938	Pre-Doctoral Internship	1-3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/psychology/graduate-studies/program-curriculum/>).

Social Science

Director: Omar Swartz, JD, PhD

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Overview

The Master of Social Science (MSS) program is designed to meet the needs of students who prefer flexibility in constructing an individualized course of study in social science. Emphasis is placed on the integration of knowledge across and beyond traditional disciplinary boundaries. This is accomplished through three required seminars, electives from a variety of disciplines chosen with the approval of advisors and program directors, and a project or thesis. Courses can be chosen from the social science disciplines: anthropology, communication, economics, geography, history, law, political science, psychology and sociology, as well as from select other disciplines and programs. The MSS program is intended for students interested in developing their own interdisciplinary perspectives in such areas as social thought, public policy, women's studies, educational reform, social justice and cross-cultural studies or politics. The program can provide: training for advancement in the professions of education, business, social service and government; a basis for further graduate studies in a specific social science discipline or professional field; a means for teachers and other working students to tailor degree programs to fit their personal career development needs; and a nontraditional approach for recent university graduates or adults re-entering the university to pursue liberal educational goals in the social sciences.

Requirements for Admission

General rules for admission into the Graduate School, (p. 59) as well as the following apply:

- evidence of a bachelor's degree
- an official copy of transcripts from all community colleges, colleges, and universities attended
- overall GPA of at least 3.2 out of 4.0
- a writing sample
- three letters of recommendation (at least two from academic sources)
- appropriate undergraduate training or professional background, or experience that provide evidence of ability to pursue the MSS degree
- a typed statement specifying the goal of advanced study in the social sciences expressed in clear, correct and effective English. Applicants should provide a statement of their background (education and experience) and its relevance to their proposed interdisciplinary graduate work, and why this graduate program is relevant to their interests.
- standardized test scores are not required, but will be considered if submitted

After meeting all other requirements for admission, applicants may be required to have an interview to discuss their interest in the program and their plans for study. For out-of-state applicants, an appropriate substitute for the interview may be determined by the directors.

Provisional Admission

Applicants may be admitted as provisional-status graduate students if their GPA is low and their complete record indicates a high probability of success.

Non-Degree Students

Potential applicants may take CU Denver graduate-level courses as non-degree students (unclassified student with a bachelor's degree) if they:

1. wish to strengthen their record in order to demonstrate their potential to successfully complete courses in the program
- or-
2. wish to start coursework in the program prior to completing their application, with the understanding that taking courses does not guarantee admission.

Up to 12 semester hours of CU Denver graduate-level work taken as a non-degree student or taken from another university may be accepted by the program once a student has been admitted to the program.

For further information on non-degree graduate student status, see the Information for Graduate Students (p. 38) section of this catalog. In the case of CU Denver graduate students transferring to the MSS program, previous coursework may be accepted as appropriate to the MSS plan of study.

International Students

International students must also meet CU Denver requirements for international admission. See the Information for International Students (p. 44) section of this catalog or call 303-315-2230 for further information.

Programs

- Social Science, MSS (p. 401)

Faculty

Associate Professors:

Omar Swartz, JD, Duke University; PhD, Purdue University

Assistant Professors:

Margaret L. Woodhull, PhD, University of Texas, Austin

Clinical Teaching Track:

Lorna Hutchison, PhD, McGill University

Social Sciences (SSCI) Courses

SSCI 5000 - 19th and 20th Century Continental Philosophy (3 Credits)

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. PHIL 3002 or PHIL 3022 are strongly recommended preparation for optimal student success. Cross-listed with PHIL 4000/5000 and HUMN 5000. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5013 - Methods and Practices of Graduate Interdisciplinary Humanities (3 Credits)

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN/PHIL 5013. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

SSCI 5020 - Foundations and Theories of Interdisciplinary Social Science (3 Credits)

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical, key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HUMN 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5023 - Research Perspectives in Social Science (3 Credits)

Introduces interdisciplinary social research through a critical examination of various methodological approaches. Each student formulates a research proposal which includes a research question, a review of the literature, and methods of study. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring, fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SSCI 5025 - Foundations and Theories of Interdisciplinary Humanities (3 Credits)

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5025. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5050 - Topics in Social Science (1-3 Credits)

These topic seminars are concerned with specialized aspects of the social sciences from various theoretical and research perspectives. These courses are interdisciplinary and serve as a forum for discussion of individual projects and theses. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: fall, spring. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5101 - Pragmatism: Classical American Philosophy (3 Credits)

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. An introductory course in philosophy is strongly recommended for optimal success. Cross-listed with PHIL 4101, 5101, HUMN 5101. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5242 - Bioethics (3 Credits)

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, HUMN 5242. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5251 - Introduction to Legal Studies (3 Credits)

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 4251/HUMN 4251/HUMN 5251. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5325 - First Amendment: Theory and Context (3 Credits)

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, HUMN 5325, SSCI 4325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5530 - Social Construction of the Self (3 Credits)

Investigates theories that address the construction of self and how that construction is constrained by culture, politics, society and historical moment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5540 - Law, Diversity and Community in United States History (3 Credits)

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5540. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5600 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 4060, and 5060. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5650 - Reflections on Modernity (3 Credits)

Explores modernity as a historical epoch and a theoretical space, looking at the commentaries and reflections of influential 20th century thinkers including Adorno, Arendt, Levinas, Merleau-Ponty, Habermas and Foucault. Examines how the theoretical inclinations of modernity were influenced by politics, art, literature and culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5650 and PHIL 5650. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5720 - Sexuality, Gender and Their Visual Representation (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5770 - Imperialism, Post-Colonial Theory, Visual Discourse (3 Credits)

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5770. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5833 - Existentialism (3 Credits)

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4833/5833 and HUMN 5833. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5840 - Independent Study: SSCI (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SSCI 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SSCI 5920 - Philosophy of Media and Technology (3 Credits)

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, HUMN 5920. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity?

This question will be examined, first by studying Plato's dialogues—such as *Lysis*, *Symposium* and *Republic*—and then by reading texts from Sigmund Freud, Michael Foucault and others. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4933, WGST 4933/5933 and HUMN 5933. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SSCI 6010 - Methods and Theories of Feminism and Gender Studies (3 Credits)

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with WGST 6010 and HUMN 6010. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 6950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

SSCI 6960 - Master's Project or Report (1-6 Credits)

Research which may be based on field work. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Additional Information: Report as Full Time.

Social Science, MSS

Graduate School Policies and Procedures (p. 59) apply to this program.

Please click [here](#) (p. 398) to see more information about the department.

Introduction

If a student prefers flexibility in constructing an individualized course of study in the social sciences, the Master of Social Science emphasizes integration of knowledge across and beyond traditional disciplinary boundaries. Courses derive primarily from the social science disciplines, like anthropology, economics, geography, history, political science,

psychology, and sociology, but may be integrated with other disciplines and programs including English, philosophy, education, health sciences, public affairs, fine arts, and architecture. Students who choose the Master of Social Science program often develop interdisciplinary perspectives in areas like public policy, gender and identity studies, educational reform, cross-cultural studies, or politics.

The Social Science program provides background for advancement in business, education, social service, and government, or a basis for further graduate or professional study. MSS students often tailor their degree program for specific career and personal needs. Many simply seek intellectual enrichment.

Students may also focus in one of several areas of concentration or formal tracks. By focusing one's studies in a track, the student is able to develop a concentrated and interdisciplinary master level expertise in a given area of interest:

Community Health Science

Ethnic Studies

International Studies

Social Justice

Society and the Environment

Women's and Gender Studies

Program Requirements

1. Students must complete a minimum of 36 approved credit hours.
2. Students must complete a minimum of 30 graduate (5000-level and above) approved credit hours.
3. Students must earn a minimum grade of B- (2.7) in all program courses taken at CU Denver and must achieve a minimum cumulative program GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty. Students may concurrently pursue graduate-level coursework at other CU system campuses with the approval of their MHMSS graduate advisor.

Program Restrictions, Allowances and Recommendations

1. Courses credited toward the MSS degree must typically be taken at CU Denver (a maximum of 12 graduate semester hours may be transferred from other institutions after matriculating into the MSS program, subject to the MSS director's approval).
2. Each student's program is supervised by MHMSS faculty. All independent study, project, and thesis contracts must be approved in advance by the program director. A total of two independent study courses and one internship may count toward the degree.
3. A maximum of two 4000-level undergraduate courses may apply, with faculty approval.
4. Students wishing to count credits accrued from a study abroad program while pursuing the MH must follow the rules of the Graduate

- School and must have approval of the program director in advance of studying abroad.
5. An oral exam defending the project or thesis before a committee of three faculty members must be passed in order to graduate.
 6. A grade below *B-* in any given course will not be counted toward the degree.
 7. Only one graduate-level online course (up to 3 hours) may be taken toward the degree, with prior approval.
 8. All students must complete and pass a final project or thesis and an oral comprehensive defense of that work, in order to graduate.

Required Courses

Code	Title	Hours
Take the following Core Seminar courses:		
SSCI 5013	Methods and Practices of Graduate Interdisciplinary Humanities (Must be taken during the first year, offered in the spring only.)	9
SSCI 5020	Foundations and Theories of Interdisciplinary Social Science (Must be taken during the first year, offered in the fall only.)	
SSCI 5023	Research Perspectives in Social Science ¹	

¹ Students should take this course after they have completed 21-24 credit hours and are ready to write a proposal for their thesis or project. This course is always offered in the spring and occasionally in the fall, as needed.

Electives

Code	Title	Hours
Students must complete a total of 21-24 credit hours. Students completing a project rather than a thesis take 24 hours of electives, while thesis students complete 21 hours of electives. Students may choose to create their own curriculum from at least two disciplines addressing their specific research interest.		
Alternatively, students may choose to follow an approved specialized track. Prior to taking electives, students must meet with a MHMSS program faculty advisor and establish their course of study. If students decide to change their course of study or want to substitute approved coursework, they must meet with a MHMSS program advisor in advance and gain pre-approval.		

MSS Elective Pathways

General MSS Track

Students pursuing the general MSS degree track create a course of study based on their individual interests and goals. In consultation with a faculty advisor, students choose two or three academic disciplines as areas of concentration.

Community Health Track

The Community Health track focuses coursework on social and communication theory, demographics and ethnic dimensions to public health, basic research methods, and statistics, in order to facilitate development of problem solving and critical thinking skills in the areas of epidemiology, public health and public health education, and health planning.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
Take 9 credit hours of approved methods courses - some of these courses have prerequisites that must be met:		9
ANTH 6063	Qualitative Research Design and Methods	3
HBSC 7041	Research Design and Methods in the Health and Behavioral Sciences I	3
HBSC 7061	Quantitative Methods in the Health and Behavioral Sciences	3
HBSC 7071	Social and Behavioral Perspectives in Population Health	3

Code	Title	Hours
Take a minimum of 6 credit hours of approved community health related elective coursework from the list below - substitutes may be approved by the student's advisor:		6
ANTH 5290	Anthropology and Public Health	3
ANTH 5300	Migrant Health	3
ANTH 5600	Medical Anthropology	3
COMM 5500	Health Communication	3
COMM 5550	Rhetorics of Medicine & Health	3
COMM 5620	Health Risk Communication	3
ECON 6210	Public Finance	3
ENVS 6230	Environmental Epidemiology	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5235	GIS Applications in the Health Sciences	3
GEOG 5710	Disasters, Climate Change, and Health	3
HLTH 6010	Health Care Systems	3
HLTH 6070	International Health Policy and Management	3
PHIL 5242	Bioethics	3
PSCI 5354	Seminar: Environmental Politics and Policy	3
PUAD 5615	Health Policy	3
WGST 5345	Gender, Science and Medicine: 1600 to the Present	3

Complete a project or thesis on an approved community health related topic.

Ethnic Studies Track

The Ethnic Studies track explores the construction of race and ethnicity by governments and communities through the intersection of popular culture and public policy in both the historical and contemporary contexts.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
Take at least one ethnic studies methods/theory course		3
ETST 5000	Research Methods in Ethnic Studies	3
EDFN 5001	Problematising Whiteness: Educating for Racial Justice	3

Code	Title	Hours
Take a minimum of 12 credit hours of approved ethnic studies related elective coursework from the list below, substitutions may be approved by the student's advisor		12
ANTH 5350	Anthropology of Globalization	3
COMM 5270	Intercultural Communication	3
EDFN 5050	Critical Issues in American Education	3
ENGL 5460	Contemporary World Literature	3

ETST 5020	Race, Culture and Immigration	3
ETST 5021	Black and Latino Children in Families and Schools	3
ETST 5030	Race, Religion and Belonging in the United States	3
ETST 5165	Cultural Diversity Awareness in the Workplace	3
ETST 5220	African-American Literature	3
or ENGL 5220	African-American Literature	
ETST 5305	Women of Color Feminisms	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5455	African Struggle for Independence	3
HIST 5462	Islam in Modern History	3
PSCI 4446	Advanced Indigenous Peoples' Politics	3
PSCI 5094	Seminar: Urban Politics	3
PSCI 5145	Indigenous Politics	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5256	Seminar: National Question and Self-Determination	3
PSCI 5446	Advanced Indigenous Peoples' Politics	3
PSCI 5545	Immigration Politics	3
PSCI 5914	Community Organizing and Community Development	3
SOCY 5050	Health Disparities	3
SOCY 5440	Poverty and Social Inequality	3
SOCY 5460	Hate Groups and Group Violence	3
SOCY 5690	Crime and Inequality Over the Life Course	3
SPAN 5020	Spanish Sociolinguistics	3
SPAN 5060	Dialects of the Spanish-Speaking World	3
SPAN 5076	Spanish in Colorado	3
SPAN 5080	Spanish in the United States	3
SPAN 5521	Mexican Literature I: pre-Columbian and Colonial	3
SPAN 5522	Mexican Literature II: 19th to 21st Centuries	3
SSCI 5540	Law, Diversity and Community in United States History	3
or HUMN 5540	Law, Diversity and Community in United States History	
SSCI 5770	Imperialism, Post-Colonial Theory, Visual Discourse	3
or HUMN 5770	Imperialism, Post-Colonial Theory & Visual Discourse	

Complete a project or thesis on an approved ethnic studies related topic.

International Studies Track

Through humanistic and social science methodologies and hands-on experiences both in Denver and abroad, students learn to identify patterns and trends in the multifaceted discipline of international studies.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
<i>Take the following methodology course or one approved by the MSS program advisor</i>		3
PSCI 5216	Seminar: International Relations	3

Code	Title	Hours
<i>Take a minimum of 15 credit hours of approved international studies related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		15
ANTH 5350	Anthropology of Globalization	3
COMM 5270	Intercultural Communication	3
COMM 5720	Dynamics of Global Communication	3
HIST 5032	Globalization in World History Since 1945	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
PHIL 5220	Aesthetics and the Philosophy of Art	3
PSCI 5236	Seminar: American Foreign Policy	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5286	International Relations: War or Peace?	3
PSCI 5326	Advanced International Political Economy: Globalization	3
PSCI 5545	Immigration Politics	3
PSCI 5555	International Women's Resistance	3
SOCY 5460	Hate Groups and Group Violence	3
SOCY 5610	Sociology of Religion	3
SSCI 5770	Imperialism, Post-Colonial Theory, Visual Discourse	3

or HUMN 5770 Imperialism, Post-Colonial Theory & Visual Discourse

Complete a project or thesis on an approved international studies related topic.

Social Justice Track

The Social Justice track expands students' recognition of the many ways that they are already engaged as citizens and highlights their power to effect change through theoretical and moral education, critical thinking, and community engagement.

It is **highly recommended** that students in this track take at least one quantitative and/or one qualitative research methods course as part of their plan of study. There are quantitative and qualitative methods courses offered in Anthropology, Environmental Science, Political Science, Sociology, and Research, Evaluation, and Statistical Methodology (RESM), which can be approved by the student's MHMSS faculty.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
<i>Take a minimum of 12 credit hours of approved social justice related elective coursework from the list below, substitutions may be approved by the student's advisor:</i>		12
BUSN 6540	Legal and Ethical Environment of Business	3
COMM 5040	Communication, Prisons, and Social Justice	3
ENGL 5190	Advanced Topics in Writing & Digital Studies	3
ENGL 5306	Survey of Feminist Thought	3
HIST 5032	Globalization in World History Since 1945	3
HIST 5308	Crime, Policing, and Justice in American History	3
HIST 5412	Mexico and the United States: People and Politics on the Border	3
HIST 5455	African Struggle for Independence	3

PSCI 5025	Local Governance and Globalization	3
PSCI 5206	Social Movements, Democracy and Global Politics	3
PSCI 5225	Democracy and Democratization	3
PSCI 5245	Gender, Globalization and Development	3
PSCI 5274	Conflict Resolution and Public Consent Building	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5286	International Relations: War or Peace?	3
PSCI 5414	Non-Profits and Social Change	3
PSCI 5545	Immigration Politics	3
PSCI 5555	International Women's Resistance	3
PSCI 5837	Contemporary Issues in Civil Liberties	3
SOCY 5440	Poverty and Social Inequality	3
SOCY 5460	Hate Groups and Group Violence	3
SSCI 5720	Sexuality, Gender and Their Visual Representation	3
or HUMN 5720 Sexuality, Gender and Their Visual Representation		
SSCI 6010	Methods and Theories of Feminism and Gender Studies	3
or HUMN 6010 Methods and Theories of Feminism and Gender		
WGST 5303	Sex and Gender in Modern Britain	3
WGST 5307	History of Sexuality	3
WGST 5345	Gender, Science and Medicine: 1600 to the Present	3

Complete a project or thesis on an approved social justice related topic.

Society and the Environment Track

Society and the Environment is an interdisciplinary track challenges students to apply knowledge from the social and biological sciences to environmental problems across a broad spectrum of institutional sectors and geographic locations.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
Take all required methods courses		6
ANTH 5053	Quantitative Methods in Anthropology	3
ANTH 6063	Qualitative Research Design and Methods	3

Code	Title	Hours
Take one technical course from the list below:		3
ENVS 6200	Risk Assessment	3
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	3
GEOG 5080	Introduction to GIS	3
GEOG 5235	GIS Applications in the Health Sciences	3

Code	Title	Hours
Take a minimum of 12 credit hours of approved society and environment related elective coursework from the list below, substitutions may be approved by the student's advisor:		12
COMM 5282	Environmental Communication	3
GEOG 5090	Environmental Modeling with Geographic Information Systems	3
GEOG 5230	Hazard Mitigation and Vulnerability Assessment	3
GEOG 5265	Sustainability in Resources Management	3
GEOG 5335	Contemporary Environmental Issues	3
GEOG 5350	Environment and Society in the American Past	3

GEOG 5420	The Politics of Nature	3
GEOG 5440	Science, Policy and the Environment	3
GEOG 5680	Urban Sustainability: Perspectives and Practice	3
GEOG 5710	Disasters, Climate Change, and Health	3
PSCI 5135	Seminar: Political Economy of Latin America	3
PSCI 5145	Indigenous Politics	3
PSCI 5217	Human Rights in Theory and Practice	3
PSCI 5236	Seminar: American Foreign Policy	3
PSCI 5276	Conflicts and Rights in International Law	3
PSCI 5354	Seminar: Environmental Politics and Policy	3
PSCI 5555	International Women's Resistance	3
ENVS 5010	Landscape Biogeochemistry	3
ENVS 5020	Earth Environments and Human Impacts	3
ENVS 5280	Environmental Hydrology	4

Complete a project or thesis on an approved society and environment related topic.

Women's and Gender Studies Track

Women's and Gender Studies are based in feminist theory, queer theory, post-colonial and ethnic studies, and a variety of social sciences and cultural studies.

In addition to the MSS Core requirements, students must:

Code	Title	Hours
Take at least one WGST theory course		3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306 Survey of Feminist Thought		
WGST 5500	Feminist Philosophy	3
or PHIL 5500 Feminist Philosophy		
WGST 6010	Methods and Theories of Feminism and Gender Studies	3
or SSCI 6010 Methods and Theories of Feminism and Gender Studies		
or HUMN 6010 Methods and Theories of Feminism and Gender		

Code	Title	Hours
Take a minimum of 12 credit hours of approved women's and gender studies related elective coursework from the list below, substitutions may be approved by the student's advisor:		12
CRJU 5910	Nature and Scope of Interpersonal Violence	3
CRJU 5930	Interpersonal Violence Law and Public Policy	3
ENGL 5000	Studies of Major Authors	3
ETST 4827	Women and the Law	3
or PSCI 4827 Women and the Law		
PSCI 4215	Women's Rights, Human Rights: Global Perspectives	3
PSCI 4564	Gender and Politics	3
PSCI 5245	Gender, Globalization and Development	3
SOCY 5550	Seminar: Sociology of the Family	3
SSCI 5770	Imperialism, Post-Colonial Theory, Visual Discourse	3
or HUMN 5770 Imperialism, Post-Colonial Theory & Visual Discourse		
WGST 5230	Women in the West	3
WGST 5248	Gender, Globalization and Development	3

or PSCI 5245	Gender, Globalization and Development	
WGST 5303	Sex and Gender in Modern Britain	3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306	Survey of Feminist Thought	
WGST 5307	History of Sexuality	3
WGST 5308	Contemporary Feminist Thought	3
or ENGL 5308	Contemporary Feminist Thought	
or PHIL 5308	Contemporary Feminist Thought	
WGST 5345	Gender, Science and Medicine: 1600 to the Present	3
WGST 5420	Goddess Traditions	3
WGST/PHIL 5500	Feminist Philosophy	3
WGST 5510	Whores and Saints: Medieval Women	3
WGST 5511	French Women Writers	3
WGST 5555	International Women's Resistance	3
or PSCI 5555	International Women's Resistance	
WGST 5720	Sexuality, Gender and Their Visual Representations	3
or SSCI 5720	Sexuality, Gender and Their Visual Representation	
or HUMN 5720	Sexuality, Gender and Their Visual Representation	

Complete a project or thesis on an approved women's and gender studies related topic.

Thesis or Project and Oral Defense

Code	Title	Hours
Complete a Thesis or Project and an oral comprehensive defense of that work, in order to graduate.		3-6
In order to proceed with a project or thesis, all students must submit a proposal and gain approval from three faculty members and the program directors. Students who opt to complete a thesis will submit a thesis proposal after completing 30 hours of course work. In the case of a project, students will submit a project proposal after 33 hours.		
SSCI 6950	Master's Thesis	6
SSCI 6960	Master's Project or Report	3

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/mhmss/mhmss-degree-information/>).

Sociology

Chair: Teresa M. Cooney

Program Assistant: Rachel M. Gallegos

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Telephone: 303-315-2148

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Website: <https://clas.ucdenver.edu/sociology/>

Overview

The MA Program in Sociology at CU Denver provides a coherent, progressive, educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. The program requires completion of 33 total credit hours, 27 which are obtained through coursework and 6 that comprise the student's comprehensive paper. The MA Program emphasizes training in research

methods and offers concentrations in Crime, Law and Deviance; Health and Society; and Family, Social Services and Community.

Admission Requirements

Application to the MA program is open to all students holding a BA, BS or higher degree in any field. Students without prior training in sociology, but with otherwise exemplary records, may be admitted but may be required to make up undergraduate deficiencies without graduate credit in the areas of theory, methods and statistics.

Recommended Academic Standards

- A combined GPA of at least 3.3 for all courses taken at the undergraduate or graduate level prior to admission
- A combined GPA of at least 3.5 for all **sociology** courses taken at the undergraduate or graduate level prior to admission

Application Materials

- Complete application form
- Three letters of recommendation (at least two must be from academic/professional sources)
- One copy of official transcripts sent directly to the Department of Sociology from all schools where BA credit hours were taken
- A statement of purpose and goals of graduate study
- Writing sample
- GRE score may be optionally submitted to aid application file
- International Students:** You must complete an International Student Application. Minimum TOEFL score of 525 required.
- Out-of-state students from 13 Western states qualify for in-state tuition as part of the WRGP Program.

Application Deadlines

Applications are accepted for **fall** admission only. All application materials are due on February 15th.

Programs

- Sociology, MA (p. 408)

Faculty

Professors:

Teresa M. Cooney, PhD, The Pennsylvania State University

Jennifer A. Reich, PhD, University of California, Davis

Associate Professors:

Candan Duran-Aydintug, PhD, Washington State University

Keith Guzik, PhD, University of Illinois at Urbana-Champaign

Assistant Professors:

Brenden Beck, PhD, City University of New York - Graduate Center

Edelina Burciaga, PhD, University of California-Irvine

Adam M. Lippert, PhD, The Pennsylvania State University

Esther Sullivan, PhD, University of Texas at Austin

Assistant Professors Clinical Teaching Track:

Maren T. Scull, PhD, Indiana University

Jenny Vermilya, PhD, University of Colorado Boulder

Senior Instructors:

Kari Alexander, PhD, University of Colorado Boulder

Instructors:

Carlos Real, MA, University of Colorado Denver

Sociology (SOCI) Courses

SOCY 5000 - Professional Seminar: Sociological Inquiry (3 Credits)

Introduces sociology graduate students to sociology as a discipline and profession. Conveys practical skills and knowledge useful to the pursuit of a graduate degree. Introduces students to sociology graduate faculty members and their research interests. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5016 - Social Theory (3 Credits)

An overview of major theories across the social behavioral sciences examining social order, integration, conflict, and change. The course emphasizes a cross disciplinary approach, highlighting works of historical and contemporary relevance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5020 - Race, Culture and Immigration (3 Credits)

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4020, ETST 4020 and ETST 5020. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5024 - Seminar: Research Methods I (3 Credits)

Problems and procedures in research design, data collection and processing. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5050 - Health Disparities (3 Credits)

This course focuses on social, economic, and political factors that shape the uneven distribution of health and illness in the United States. Social determinants of health are explored, including socioeconomic status, race and ethnicity, neighborhood environments, social relationships, and gender. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4050. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5110 - Sociology of Health Care (3 Credits)

Examines U.S. health care institutions and issues such as rising costs, the effects of class, racial and gender inequality, professionalization and monopolization of roles, construction of illness and health, managed care, for-profit health care, and ethics of health care decisions. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4110. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5183 - Seminar: Quantitative Data Analysis (3 Credits)

A research-oriented seminar stressing the utilization of social data already collected in the test or generation of sociological theory. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5193 - Seminar: Qualitative Data Analysis (3 Credits)

Develops skills for designing studies, collecting and analyzing data, and evaluating qualitative research. Concentrates on ethnography, in-depth interviewing, and content analysis. Students read examples of qualitative research and about the process of qualitative research, as well as conducting independent research. Note: Required for M.A. graduate students in sociology. Prereq: graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5220 - Population Change and Analysis (3 Credits)

Concepts of population change, methods of analysis, and applications to contemporary social issues. Topics include age and sex distributions, fertility, mortality, and migration, and the social causes and consequences of these phenomena. Cross-listed with SOCY 4220. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5270 - Socl Meanings of Reproduction (3 Credits)

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4270, WGST 4270 and WGST 5270. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5290 - Aging, Society and Social Policy (3 Credits)

A sociological examination of central issues (e.g., work, retirement, family support, health) pertaining to the aging population. Heterogeneity in aging, as shaped by gender, race, ethnicity and social class is addressed, as well as policies pertaining to the adult population. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4290. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5440 - Poverty and Social Inequality (3 Credits)

Investigates the distribution of wealth, income, and economic power in the United States with a focus on social institutions and factors that shape inequality. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4440. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5460 - Hate Groups and Group Violence (3 Credits)

Social sciences help us understand the phenomena of hate groups and group violence and contribute toward their elimination. Examples are examined using theoretical perspectives on different levels of analysis and within different areas of research. Cross-listed with SOCY 4460.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5475 - Self and Identity (3 Credits)

A course in social psychology focusing on individuals in social interaction. Focuses of self-conception, identity, presentation of self, and self and emotion management. Examines major theories and research in social psychology. Prereq: Graduate standing. Cross-listed with SOCY 4475. Term offered: summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Summer.

SOCY 5550 - Seminar: Sociology of the Family (3 Credits)

An intensive review and analysis of the family as a social institution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5590 - Crime, Justice, and the City (3 Credits)

In this course, we will ask why inequality, crime, and police are unevenly spread across cities. We will examine why crime varies by neighborhood, whether place-based policing is racially biased, and why prisons are filled with people from just a few zip codes. We will study racial and economic segregation, gentrification, white flight, and suburbanization in the context of criminal justice. Spatial analysis is a growing field combining geography, sociology, and criminology. We will study it by reading cutting-edge researchers who use mapping, interviews, statistical analysis, and ethnography. Restriction: Restricted to Graduate and Graduate Non-degree majors. Cross-listed with SOCY 4590. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5610 - Sociology of Religion (3 Credits)

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Cross-listed with SOCY 4610, RLST 4020, RLST 5020. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5640 - Sociology of Childhood and Adolescence (3 Credits)

An in-depth overview of the theories and research regarding the life course understanding of infancy, childhood and adolescence. Children's lives and cultures in relation to adults and their transition from childhood to adolescence are studied. Cross-listed with SOCY 4640. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5650 - Sociology of Adulthood and Aging (3 Credits)

Examination of the adult life course—post-adolescence to death, focusing on key social transitions of adulthood (e.g., independence from parents, marriage, retirement), and historical, institutional, and social factors that create variation in their timing, meaning, and individuals' role experiences. Cross-listed with SOCY 4650. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5660 - Seminar: Social Psychology (3 Credits)

Sociological approaches to the study of the self, role theory, persons in situations, identifications, socialization, and other characteristics of persons in society. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5690 - Crime and Inequality Over the Life Course (3 Credits)

Life-course perspective on inequality and crime. Studies transitions, trajectories and turning points as key features of the life course.

Considers how inequalities and criminal behavior are shaped by timing of experiences, historical and geographic contexts, others' lives, and human agency. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5740 - Courts & Society (3 Credits)

Courts are a centerpiece of modern legal systems that mediate social relationships and people's relationship to the state. This course explores the connection between courts and democratic society by considering the operation and evolution of courts in the U.S. Cross-listed with SOCY 4740. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5750 - Seminar: Criminology (3 Credits)

An intensive review and analysis of the literature and research dealing with sociology of crime in modern society. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5770 - Advanced Topics in Sociology (1-3 Credits)

Advanced study of special topics in sociology to be selected by the instructor. Note: May be repeated for credit when topics vary. Cross-listed with SOCY 4770. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5780 - Violence in Relationships (3 Credits)

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Prereq: Graduate standing. Cross-listed with SOCY 4780, WGST 4780 and WGST 5780. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

SOCY 5840 - Independent Study: SOCY (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5955 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

SOCY 5964 - Master's Report (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

SOCY 5995 - Global Study Topics (3-6 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Department consent required. Repeatable. Max hours: 12 Credits

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Sociology, MA

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

The MA Program in Sociology at CU Denver provides a coherent, progressive, educational experience that prepares students for either immediate entry to a master's level career or continued study in Ph.D. programs. The program requires completion of 33 total credit hours, 27 of which are courses and 6 comprise the student's comprehensive paper. The comprehensive paper is either a thesis or an internship with a final report.

Please click here (p. 405) to see Sociology department information.

MA Program Strengths

- **Emphasis on Methodology** - This program distinguishes itself, in part, by its strong emphasis on methodology. All students are required to take 9 credit hours of research methodology and analysis (Research Methods, Quantitative Data Analysis, and Qualitative Data Analysis).
- **An Urban Environment** - The MA program in Sociology at CU Denver benefits tremendously from its location in a state capital and one of the fastest-growing urban areas in the U.S. This dynamic context provides a natural classroom for teaching our specialties: Health & Society; Crime, Law & Deviance; and, Family, Social Services & Community.

- **Institutional Connections** - Our proximity and institutional connection to the top-rated University of Colorado Anschutz Medical Campus (AMC) offer training opportunities as well, which are facilitated by engagement of departmental faculty with AMC medical researchers. In addition, strong integration of our faculty with the CU Denver campus community supports collaborative teaching and training efforts with faculty in the Departments of Geography, Anthropology, and Health & Behavioral Sciences.

Substantive Concentrations

In addition to education and training for sociology generalists, the program offers concentrations in three substantive areas. To receive an area concentration, students must successfully complete three courses within the area. Eligible courses are either within or outside the department, but the student may only take two courses outside the department.

Concentrations

Crime, Law and Deviance

The focus of this concentration is to provide students with an in-depth understanding of criminology including the social construction of laws, the causes of crime, reactions to law violations, and the prevention, control, and treatment of crime. Additionally, the program teaches students how deviant categories are created, how groups gain control over social definitions, and the consequences these definitions have in the form of norms, laws, and social sanctions. The concentration on crime, law, and deviance also focuses on how legal systems maintain and reproduces social inequalities. This offers an essential foundation for students pursuing careers in criminal justice, victim and community services, criminal law, and non-profit organizations in local and international contexts. Students may ultimately use this degree to conduct social research on crime, influence public policy, and inform government decisions about crime and law.

Health and Society

Enhancing the health and quality of life for individuals and communities are central goals to societies the world over. Health and medical sociology is a subfield devoted to the study of population health, health care systems and policy, and the social dimensions of illness and healing. Health and medical sociologists study the causes of health inequalities, social constructions of health and illness, origins of medical authority, doctor-patient relationships, community influences on health, and the social forces that affect policy. The Sociology Department's MA concentration in Health and Society provides training in the core research methodologies and theories of medical sociology, examining individual experience, institutional structures, laws and policies that affect health, and broader systems of inequality that lead to unequal rates of illness and access to care. This area of concentration provides in-depth training and is ideal for students interested in further graduate-level study and social research on health and medicine as well as those interested in careers in public health, health care services, and non-profit organizations.

Family, Social Services, and Community

Families play a significant part in individuals' lives and society. At the micro or interpersonal level they are a setting for small-group processes such as socialization, conflict, communication and intimacy. At the meso or institutional level they interact with other major social institutions including those affecting education, law, healthcare,

religion, the economy, criminal justice, and welfare. At the macro or structural level, the family—in its varied and diverse forms also is key to understanding how inequality is experienced and reproduced in society. The interplay of these multiple levels—the micro or interpersonal, the meso or institutional, and the macro or structural—is important as well as individuals influence social structures and institutions, and the latter, in turn, affect family interactions and relationships. This concentration provides in depth understanding of the complex role of families and family members at multiple levels, as well as the social systems, organizations and communities responsible for supporting families and individuals.

Program Requirements

The MA program in Sociology provides a coherent, progressive educational experience that prepares students for either immediate entry to a master's level career or continued study in a PhD program. Students choose from two options for their Comprehensive Paper that completes the master's degree: either a 6-credit thesis, or a 3-credit applied experience plus a 3-credit paper. The program also offers 3 concentration areas (Crime, Law & Deviance; Health & Society; Family, Social Services & Community) for students seeking specialization in high-demand career areas.

1. Students must complete a minimum of 27 SOCY credit hours.
2. Students must complete a minimum of 33 graduate (5000-level) or higher credit hours.
3. Students must earn a minimum grade of B (3.0) or better in all core courses, a B- (2.7) in all other courses taken at CU Denver and must achieve a minimum cumulative major GPA of 3.0. All graded attempts in required and elective courses are calculated in the program GPA. Students cannot complete program or ancillary course requirements as pass/fail.
4. Students must complete all coursework with CU Denver faculty.

Program Restrictions, Allowances and Recommendations

1. Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 12 elective credits requirement, or a combination of the following:
 - a. Independent study: maximum 6 semester hours
 - b. Graduate level courses in other departments: maximum 6 semester hours
 - c. Internship: maximum 3 semester hours
2. SOCY 5000 Professional Seminar: Sociological Inquiry must be taken in the first fall semester. SOCY 5024 Seminar: Research Methods I must be taken before SOCY 5183 Seminar: Quantitative Data Analysis and SOCY 5193 Seminar: Qualitative Data Analysis.

Required Courses

Tier I Knowledge

Code	Title	Hours
<i>Take the following Core courses</i>		<i>15</i>
SOCY 5000	Professional Seminar: Sociological Inquiry ¹	3
SOCY 5016	Social Theory	3
SOCY 5024	Seminar: Research Methods I ¹	3

SOCY 5183	Seminar: Quantitative Data Analysis ¹	3
SOCY 5193	Seminar: Qualitative Data Analysis ¹	3

¹ SOCY 5000 Professional Seminar: Sociological Inquiry must be taken in the first fall semester. SOCY 5024 Seminar: Research Methods I must be taken before SOCY 5183 Seminar: Quantitative Data Analysis and SOCY 5193 Seminar: Qualitative Data Analysis. Students must earn a B or better in all core courses.

Electives

Tier 2 Knowledge Applied to Substantive Areas

Code	Title	Hours
Take a minimum of 12 elective credits.		12
Students can take an unlimited number of sociology graduate (5000-level) seminars to fulfill their 12 elective credits requirement, or a combination of the following: Independent study: maximum 6 semester hours Graduate level courses in other departments: maximum 6 semester hours Internship: maximum 3 semester hours		
SOCY 5020	Race, Culture and Immigration	3
SOCY 5050	Health Disparities	3
SOCY 5110	Sociology of Health Care	3
SOCY 5220	Population Change and Analysis	3
SOCY 5270	SocI Meanings of Reproduction	3
SOCY 5290	Aging, Society and Social Policy	3
SOCY 5440	Poverty and Social Inequality	3
SOCY 5460	Hate Groups and Group Violence	3
SOCY 5475	Self and Identity	3
SOCY 5550	Seminar: Sociology of the Family	3
SOCY 5590	Crime, Justice, and the City	3
SOCY 5610	Sociology of Religion	3
SOCY 5640	Sociology of Childhood and Adolescence	3
SOCY 5650	Sociology of Adulthood and Aging	3
SOCY 5660	Seminar: Social Psychology	3
SOCY 5690	Crime and Inequality Over the Life Course	3
SOCY 5740	Courts & Society	3
SOCY 5750	Seminar: Criminology	3
SOCY 5770	Advanced Topics in Sociology	1-3
SOCY 5780	Violence in Relationships	3
SOCY 5840	Independent Study: SOCY	1-3
SOCY 5995	Global Study Topics	3-6

Comprehensive Paper

Students must choose **one** of the following Comprehensive Paper options:

Thesis Option

Code	Title	Hours
Take the following		6
SOCY 5955	Master's Thesis	6

Applied Project

Code	Title	Hours
Take the following		6
SOCY 5840	Independent Study: SOCY	3

or SOCY 5939	Internship	
SOCY 5964	Master's Report	3

For further information about the Department of Sociology or the MA program, visit the Sociology website (<https://clas.ucdenver.edu/sociology/>).

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/sociology/sociology-ma-learning-outcomes/>).

Women's and Gender Studies

Director: Sarah Hagelin (English)
Graduate Advisor: Margaret Woodhull (Humanities)
Office: 1050 9th Street, #102
Telephone: 303-556-4529
Fax: 303-556-2959
Website: clas.ucdenver.edu/wgst/ (<http://clas.ucdenver.edu/wgst/>)

Overview

Women's and Gender Studies (WGST) is an interdisciplinary program that focuses on the centrality of gender and sexuality to understanding our past and present worlds. Students and faculty probe assumptions about men and women and question structures of inequality as they play out in local and global contexts. Through a study of gender and sexuality, we expand our thinking about other relations of power, such as race, class, ethnicity, nationality and physical ability. WGST fosters connections with the local community and promotes advocacy of human rights and social justice.

Graduate Studies

At the graduate level, students may pursue Women's and Gender Studies as a track in the Master of Social Science degree program (p. 401). Students learn to think critically about the condition of women and the role of gender in both historical and contemporary experience. Course work focuses on conceptual models for understanding women and gender, such as feminist, queer, post-colonial and race theories as they operate through culture, language, politics, visual representation and history. For more information, contact Margaret Woodhull (margaret.woodhull@ucdenver.edu).

The WGST program also offers a Graduate Certificate in Women's and Gender Studies for students pursuing master's degrees in departments in the College of Liberal Arts and Sciences as well as non-degree seeking students.

Click here (p. 413) to learn about the **requirements for the Graduate Certificate in Women's and Gender Studies**.

Programs

- Women's and Gender Studies Graduate Certificate (p. 413)

Associated Faculty

Joanne Addison (English)
Brenda J. Allen (Communication)
Elizabeth Allen (Psychology)
Laura Argys (Economics)
Pompa Banerjee (English)
Nicole Beer (English)

Myra Bookman (Humanities and Social Sciences)

Michelle Comstock (English)

Mary Coussons-Read (Psychology)

Candan Duran-Aydintug (Sociology)

Paula Espinoza (Ethnic Studies)

Jana Everett (Political Science)

Sarah Fields (Communication)

Sonja Foss (Communication)

Andrea Haar (Sociology)

Sarah Hagelin (English)

Rachel Harding (Ethnic Studies)

Amy Hasinoff (Communication)

Pamela Laird (History)

Marjorie Levine-Clark (History)

Donna Martinez (Ethnic Studies)

Myra Rich (History)

Candice Shelby (Philosophy)

Sarah Tyson (Philosophy)

Cate Wiley (English)

Women's Studies (WGST) Courses

WGST 5010 - Special Topics in Women's and Gender Studies (1-3 Credits)

Examines current topics in the field of Women's studies and Gender studies. Topics vary from term to term. May be repeated as long as the topic is distinct and different from courses student has already received credit for. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5225 - Urban America: Colonial Times to the Present (3 Credits)

Rise of the American city from colonial times to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of urban America. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4225, HIST 5225, WGST 5225, GEOG 4625. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5230 - Women in the West (3 Credits)

Focuses on ways in which women, from the mid-19th century through the mid-20th century, of different races, classes, and ethnic background, have interacted and been active participants in the development of the Western states. Cross-listed with WGST 4230 and HIST 4230/5230.

Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5248 - Gender, Globalization and Development (3 Credits)

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with WGST 4248 and PSCI 4248/5245. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5270 - Social Meanings of Reproduction (3 Credits)

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Cross-listed with SOCY 4270, SOCY 5270 and WGST 4270. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5303 - Sex and Gender in Modern Britain (3 Credits)

Examines modern British history by focusing on sex and gender as central aspects in people's lives. Considers the ways gender shapes the realms of politics, economics, society and culture in Britain from the 18th century to present. Cross-listed with WGST 4303 and HIST 4303/5303. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5305 - Women of Color Feminisms (3 Credits)

This course is an overview of women of color feminist theorizing (thinking) and praxis (practice) in the U.S. We will explore these feminisms through the writing, art, and organizing efforts of women and trans, femme, and non-binary people of color with a focus on key themes and concepts including identity, difference, oppression, intersectionality, representation, violence, resistance, empowerment, solidarity, and coalition. Texts for the course highlight key issues in the feminist theorizing and praxis of Black, Latina/x, Chicana/x, Asian (American), Pacific Islander, Indigenous, and Arab (American) women and trans, femme, and non-binary people of color, especially the politics of identity and representation; structural oppressions and violences; and practices of survival, resistance, and activism. Not only will we examine how these feminists have critiqued oppression(s) based on race, class, gender, sexuality, nationality, and religion, (as well as how these systems of domination intersect), but what kinds of approaches, strategies, and changes these thinkers and activists have organized for and promoted. Cross-listed with WGST 4305, ETST 4305 and ETST 5305. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5306 - Survey of Feminist Thought (3 Credits)

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, 5306, HIST 4306, 5306, WGST 4306. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5307 - History of Sexuality (3 Credits)

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Cross-listed with WGST 4307 and HIST 4307/5307. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5308 - Contemporary Feminist Thought (3 Credits)

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, PHIL 5308, WGST 4308. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5343 - Women & Gender in US History (3 Credits)

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with WGST 3343, HIST 3343, and HIST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5345 - Gender, Science and Medicine: 1600 to the Present (3 Credits)

Examines the ways science and medicine have both shaped and been shaped by ideas about gender. Pays particular attention to the relationship between scientific/medical ideas about the sexes and the social organization of gender. Cross-listed with WGST 4345 and HIST 4345/5345. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5420 - Goddess Traditions (3 Credits)

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Cross-listed with WGST 4420 and RLST 4420/5420. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5500 - Feminist Philosophy (3 Credits)

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Cross-listed with WGST 4500, PHIL 4500 & 5500. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5510 - Whores and Saints: Medieval Women (3 Credits)

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Prereq: Nine hours of literature courses or instructor permission. Cross-listed with WGST 4510, ENGL 4510/5510 and RLST 4730/5730. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5511 - French Women Writers (3 Credits)

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Prereq: Graduate standing. Cross-listed with WGST 4511 and FREN 4510/5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5540 - Race, Class and Gender in Spanish Golden Age Literature (3 Credits)

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq: graduate standing. Cross-listed with WGST 4540 and SPAN 4340/5340. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5555 - International Women's Resistance (3 Credits)

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Cross-listed with WGST 4555, ETST 4555 and PSCI 4555/5555. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5660 - Queer Media Studies (3 Credits)

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, COMM 5660, WGST 4660.

Restriction: Restricted to Graduate and Graduate Non-Degree majors

(NDGR-NHL and NDGR-NLA). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5710 - Women and Religion (3 Credits)

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 4710, RLST 4710/5710. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5720 - Sexuality, Gender and Their Visual Representations (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Cross-listed with HUMN 5720 and SSCI 5720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5780 - Violence in Relationships (3 Credits)

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4780, SOCY 5780 and WGST 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: permission of instructor. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

WGST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

WGST 5900 - Smart Girl Coaching Training and Practicum (3 Credits)

Course provides training (lecture and role-playing) in coaching and mentoring which will be applied to support near-peer guides in delivering the Smart Girl curriculum in school settings. Following the completion of the training, students work as coaches for teams of near-peer mentors and groups of teenage girls in the Denver Community, and apply the skills learned in their training. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933/5933, WGST 4933, SSCI 5933 and HUMN 5933. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 6010 - Methods and Theories of Feminism and Gender Studies (3 Credits)

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories. Cross-listed with SSCI 6010 and HUMN 6010. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Women's and Gender Studies Graduate Certificate

Graduate School Policies and Procedures (p. 59) apply to this program.

Introduction

The Women's and Gender Studies Graduate Certificate is administered through the Women's and Gender Studies program in the College of Liberal Arts and Sciences at the University of Colorado Denver. It is designed to provide members of the CU Denver population and public with specialized knowledge of the history, politics, literature and social practices related to women's and gender concerns. Acceptance into the certificate program is subject to CU Denver Graduate School Policies and Procedures. (p. 59)

The WGST certificate is available to any qualified graduate student or non-degree seeking graduate-level student at CU Denver. Students begin with a required, graduate-level methodology or foundational course before pursuing a combination of WGST-related course work. Upon completion of the certificate, students will have foundational and theoretical knowledge of the major concerns of women's and gender studies.

All prospective students must complete and submit an application to the program which can be obtained from the graduate advisor. Upon admission to the certificate program, students are eligible for the certificate.

Program Requirements

1. Students must complete a minimum of 12 credit hours from approved coursework.
2. Students must complete a minimum of 9 credit hours for the certificate at the graduate (5000 or above) level.
3. Students must earn a minimum grade of B- (2.7) in all courses taken at CU Denver and must achieve a minimum cumulative certificate GPA of 3.0. All graded attempts in required and elective courses are calculated in the certificate GPA.
4. Students must complete all credits for the certificate with CU Denver faculty.

Courses

Note: Some of the following courses may have prerequisites that *must* be met. Please see course descriptions.

Required Courses

Code	Title	Hours
<i>Take one of the following:</i>		3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306	Survey of Feminist Thought	
WGST 6010	Methods and Theories of Feminism and Gender Studies	3
or HUMN 6010	Methods and Theories of Feminism and Gender	
or SSCI 6010	Methods and Theories of Feminism and Gender Studies	

Elective Courses

These courses must be explicitly women's and/or gender and/or identity-based courses. They can be taken through any CU Denver department or program with the approval of an advisor. Only one 4000-level elective may be counted toward the certificate. All other course work must be 5000-level or above.

The following is a representative listing of WGST-related courses that may be taken toward the certificate; it is not comprehensive. Please note that some of these courses may be taught sporadically. Students should meet with their advisor to plan their course of study.

Code	Title	Hours
<i>Take three of the following, not already taken above</i>		9
ANTH 5200	Gender in Cross-Cultural Perspective	3
COMM 5265	Gender and Communication	3
CRJU 5553	Women, Crime, and Justice	3
ENGL 5000	Studies of Major Authors ¹	3
PSCI 5245	Gender, Globalization and Development	3
or WGST 5248	Gender, Globalization and Development	
PUAD 5910	Nature and Scope of Interpersonal Violence	3
PUAD 5920	The Psychology of Interpersonal Violence	3
PUAD 5930	Interpersonal Violence Law and Policy	3
SOCY 5550	Seminar: Sociology of the Family	3
WGST 5306	Survey of Feminist Thought	3
or ENGL 5306	Survey of Feminist Thought	
WGST 5307	History of Sexuality	3
or HIST 5307	History of Sexuality	
WGST 5308	Contemporary Feminist Thought	3
or ENGL 5308	Contemporary Feminist Thought	
WGST 5510	Whores and Saints: Medieval Women	3
or ENGL 5510	Whores and Saints: Medieval Women	
WGST 5555	International Women's Resistance	3
or PSCI 5555	International Women's Resistance	
WGST 5720	Sexuality, Gender and Their Visual Representations	3
or HUMN 5720	Sexuality, Gender and Their Visual Representation	
WGST 6010	Methods and Theories of Feminism and Gender Studies	3
or HUMN 6010	Methods and Theories of Feminism and Gender	
or SSCI 6010	Methods and Theories of Feminism and Gender Studies	

¹ depending on author being studied; e.g., Virginia Woolf, George Sand, etc.

To learn more about the Student Learning Outcomes for this program, please visit our website (<https://clas.ucdenver.edu/wgst/graduate-certificate-wgst/>).

School of Education & Human Development

Leadership

Dean

Rebecca Kantor, Professor and Dean

Associate Deans

Dorothy Garrison-Wade, Faculty Affairs

Barbara Seidl, Teacher Education and Undergraduate Experiences

Scott Bauer, Advanced Education and Doctoral Programs

Assistant Deans

Patricia Ball, Finance and HR

Brad Hinson, Information & Academic Technology

Sandy Mondragon, Student Success and Enrollment Management

Contact

Admissions

Office of Admissions & Outreach

1380 Lawrence Street Center, Suite 701

303-315-6300

Email: education@ucdenver.edu

Website: <https://education.ucdenver.edu/>

Mailing Address

School of Education & Human Development

P.O. Box 173364, Campus Box 106

Denver, CO 80217-3364

Overview

The School of Education & Human Development is a vibrant community of practicing educators and counselors, educational leaders and researchers who have a strong service ethic locally, nationally and globally and a dedication to excellence.

Mission

Leadership for Educational Equity

Prepare and inspire education and mental health leaders to have a profound impact in fostering student opportunity, achievement and success in urban and diverse communities.

Vision

A leading school of education providing national expertise on educational issues and socially-just solutions for urban and diverse communities.

Through innovative research and partnerships, we strive to be passionate agents of change, inspiring upcoming generations to learn from the past and shape the future.

Our Role in the Community

We are committed to developing forward-thinking educators and counselors who have a deep sense of inquiry, a concern for pressing social problems, a great desire to live their lives purposefully, a passion for giving back to the community and the cultural competence needed to serve urban and diverse populations.

Diversity and Inclusion

At the School of Education & Human Development (SEHD), we believe strongly that all students-diverse in race, ethnicity, economic resources, language, fluency, abilities, geography, first-generation status, age,

gender, and sexual identities-deserve the opportunity to learn. To advance our mission and meet the changing interests of our local and global communities, the Office of Diversity and Inclusion has been established to create positive momentum towards educational access, equity, and success.

Accreditations

The School of Education & Human Development is fully accredited by the Colorado Department of Education (CDE).

The School of Education & Human Development is fully accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP) in Clinical Mental Health Counseling, School Counseling and Marriage and Family Therapy/Counseling.

The School of Education & Human Development is accredited on contingency by the American Psychological Association (APA) in School Psychology. We anticipate receiving full accreditation on or prior to the expiration date of April 15, 2023.

Programs Leading to Degrees, Licenses and Endorsements

The School of Education & Human Development offers three doctoral programs, one educational specialist degree, master's degrees in seven program areas as well as undergraduate degrees with teacher licensure through a partnership with the College of Liberal Arts and Sciences.

We offer a variety of endorsements and certificate programs as well. Students may pursue a variety of state licenses for teaching and school administration or may elect to earn these licenses without pursuing a graduate degree.

School of Education & Human Development Departments and Programs

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- Counseling (p. 416)
 - Counseling, MA (p. 421)
 - Couple, Marriage and Family Therapy, MA (p. 422)
 - Culturally and Linguistically Diverse Education (p. 422)
 - Culturally and Linguistically Diverse Education, MA (p. 426)
 - Culturally and Linguistically Diverse Education with K-12 Endorsement, MA (p. 427)
 - Culturally and Linguistically Diverse Education, MA with K-12 Endorsement & Bilingual Specialist Endorsement (p. 427)
 - Culturally and Linguistically Diverse Education, MA with Bilingual Specialist Endorsement (p. 428)
 - Culturally and Linguistically Diverse Education Endorsement: K-12 (p. 429)
 - Culturally and Linguistically Diverse Bilingual Specialist Endorsement (p. 429)
 - Teaching for Cultural and Linguistic Diversity (TCLD) Certificate (p. 430)
 - Curriculum and Instruction (p. 430)
 - Critical Pedagogy, MA (p. 430)
 - Doctoral Studies in Education (p. 431)
 - Education and Human Development, PhD (p. 431)
 - Leadership for Educational Equity, EdD (p. 433)
 - Early Childhood Education (p. 434)
 - Early Childhood Education, MA (p. 439)
 - Early Childhood Special Education Specialist Endorsement (p. 440)
 - Early Childhood Special Education Specialist Licensure (p. 441)
 - Leadership for Educational Organizations (p. 442)
 - Leadership for Educational Organizations with Principal Licensure, EdS (p. 446)
 - Leadership for Educational Organizations - Principal Licensure, MA (p. 446)
 - Administrator License - Executive Leadership Program (p. 446)
 - Principal Licensure (p. 447)
 - Learning, Developmental and Family Sciences (p. 447)
 - Learning, Developmental and Family Sciences, MA (p. 450)
 - Learning Design and Technology (p. 451)
 - Learning Design and Technology, MA (p. 454)
 - Teacher Librarian Endorsement (p. 454)
 - Leadership: P-12 Library Programs (p. 455)
 - Leadership for Learning Design and Technology Certificate (p. 455)
 - Learning Experience Design Certificate (p. 455)
 - Online Teaching and Learning Certificate (p. 456)
 - Open Digital Education Certificate (p. 456)
 - Instructional Technology Specialist Endorsement (p. 456)
 - Research and Evaluation Methods (p. 457)
 - Research and Evaluation Methods, MA (p. 460)
 - Applied Measurement Certificate (p. 461)
 - Applied Statistical Modeling Certificate (p. 461)
 - Classroom Assessment Certificate (p. 461)
 - Program Evaluation Certificate (p. 462)
 - Responsive Literacy Education (p. 462)
 - Literacy Education, MA (p. 466)
 - Literacy Education in English Education, MA (p. 466)
 - Literacy Education with Reading Teacher K-12 Endorsement, MA (p. 467)
 - Reading Teacher K-12 Endorsement (p. 468)
 - Early Literacy Certificate (p. 468)
 - Literacy and Language Development for Diverse Learners Certificate (p. 468)
 - School Psychology (p. 468)
 - School Psychology, PsyD (p. 472)
 - Special Education (p. 472)
 - Special Education, MA (p. 475)
 - Special Education with Applied Behavior Analysis Emphasis, MA (p. 476)
 - Special Education with Special Education Generalist (Ages 5-21) Endorsement, MA (p. 477)
 - Special Education Generalist Endorsement Only (p. 477)
 - STEM Education (p. 478)
 - Mathematics Education, MEd (p. 482)
 - STEM Education with a concentration in Mathematics Education, MA (p. 482)
 - STEM Education with a concentration in Math and Science Education, MA (p. 483)
 - STEM Education with a concentration in Science Education, MA (p. 483)

- Middle School Math Endorsement (p. 484)
- Mathematical Content Knowledge for Teaching, Graduate Certificate (p. 484)
- Teaching, MA (p. 485)

Counseling

Office: 1380 Lawrence Street 701

Telephone: 303-315-6300

Website: <https://education.ucdenver.edu/academics/graduate/counseling> (<https://education.ucdenver.edu/academics/graduate/counseling/>)

Overview

The Master of Arts degree in Counseling program prepares professionals for community/mental health agencies, private practice, and public schools. Students accepted into the Counseling program follow one of two concentration areas. The clinical mental health counseling track follows state licensure requirements for Licensed Professional Counselor (LPC); the school counseling track follows the requirements for both the LPC and Colorado Department of Education licensure requirements Licensed School Counselor.

Both the clinical mental health and school counselor tracks consist of 63 semester hours. Core courses that are common to all licensure areas of study are followed by courses specific to concentration area. Both specializations require a practicum (150 clock hours) and an internship (600 clock hours). The master's degree is a three to three and a half-year program with course work for two to two and a half years followed by a 12-16 months of practicum and internship.

The clinical mental health and school counseling tracks are nationally accredited by CACREP, the Council for the Accreditation of Counseling and Related Educational Programs.

Admission Requirements

Successful applicants to the Counseling program will have obtained a minimum 2.75 undergraduate GPA. Also, applicants will submit a current resume, a letter of intent, three letters of recommendation, and additional required materials. Applicants meeting these minimum standards may be invited to a half-day group interview that involves program orientation, small group interviews, a writing assignment, and a group exercise.

A prerequisite course in basic statistics (undergraduate or graduate level) is required prior to enrollment in the program or may be completed during the first semester in the program.

Application materials are available at <https://education.ucdenver.edu/academic-services/admissions> (<https://education.ucdenver.edu/academic-services/admissions/>). All materials must be submitted online by the appropriate deadline: September 15 for spring semester and January 15 for fall semester.

Programs

- Counseling, MA (p. 421)

Faculty

Information about faculty in the Counseling program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/counseling> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/counseling/>)

education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/counseling/.

Counseling (COUN) Courses

COUN 5000 - Human Sexuality (3 Credits)

Students will become familiar with human sexuality across the life span. Ecological and family systems theories will provide an understanding of human sexuality from a systemic perspective. Implications for working with individuals, families, and couples will be examined. Prereq: COUN 5010. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5010 - Counseling Theories (3 Credits)

Focuses on counseling theories: Psychodynamic, Adlerian, Person-Centered, Existential, Behavioral, including DBT, Cognitive Behavioral, Gestalt, & Reality Therapy. Also includes an overview of the history of the counseling profession and the role and function of counselors in various settings. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5050 - Foundations of Student Affairs (3 Credits)

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFS 4050. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COUN 5070 - Law and Ethics in Higher Ed and Student Affairs (3 Credits)

This course will introduce students to the laws that impact college students and institutions of higher education. Graduate students will obtain knowledge of and the necessary skills to apply a code of ethics to their practice in student affairs. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5100 - Techniques of Counseling (3 Credits)

Students practice basic counseling skills, develop therapeutic intervention strategies, and improve the effectiveness of their communication by practicing listening and responding. Videotaped role-plays are utilized. Prereq: COUN 5010 and 5810 and COUN-MA or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and COUN 5810 and COUN-MA OR CAFT_MA majors within the School of Education and Human Development.

COUN 5110 - Group Counseling (3 Credits)

Learn group theory and dynamics. Practice facilitating a group. Learn about screening, group membership and styles, roles and behavior, termination of groups. Extensive practice in laboratory setting. Prereq: COUN 5010, COUN 5100 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5810 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5120 - Counseling Grief and Loss (3 Credits)

This elective course is an introduction and study of the field of bereavement in counseling. Studies focus on relating to client's experience with grief, loss and/or trauma through lectures, speakers, videos, readings, experiential in-class simulations, self-discovery and introspection. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5130 - College Student Development (3 Credits)

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFS 4130. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COUN 5150 - Family Counseling/Therapy (3 Credits)

Introduces systemic and family theories and intervention strategies. Emphasis on historical development of systems theory. Prereqs: COUN 5010 and COUN 5810 or COUN-MA CFT or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: COUN 5010 and COUN 5810 or COUN-MA CFT or CAFT majors within the School of Education and Human Development.

COUN 5160 - Techniques in Family Counseling/Therapy (3 Credits)

This didactic and experiential course presents an overview of techniques and theories in family therapy. It will help students continue to develop a theoretical framework for engaging in theory driven therapeutic interventions via practice family therapy role plays Prereq: COUN 5010, 5100 and 5150, or COUN-MA-CFT and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5150 or CAFT_MA or COUN-MA-CFT majors.

COUN 5180 - Counseling/Therapy Couples (3 Credits)

This course is didactic and experiential dealing with therapeutic techniques applied to the improvement of intimate/couple relationships. Emphasis is placed on empirically based assessment, diagnosis, and treatment of couples' problems. Special topics include: cohabiting couples, gay and lesbian couples, remarried couples, cross-cultural couples, ethical and moral dimensions of couple counseling, unique couple issues, and the effectiveness of couple therapy. Prereq: COUN 5010, COUN 5100, and COUN 5150 or COUN MA-CFT and CAFT majors within the School of Education and Human Development. Cross-listed with CMFT 5180. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5150 or CAFT_MA or COUN-MA-CFT majors.

COUN 5280 - Addictions Counseling (3 Credits)

Includes treatment strategies for clinicians in addressing varieties of addictive behaviors including substance, abuse, eating disorders, gambling and sexual addiction. Cultural dimensions of addictions are also considered. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restricted to Graduate level students in the School of Education and Human Development

COUN 5330 - Counseling Issues and Ethics (3 Credits)

An in-depth examination of ethical and legal issues in the field. Topics include working with individuals and family systems, licensure, professional associations, record keeping and statutory requirements.

Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and COUN 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5400 - Career Development (3 Credits)

Development of competencies in career development counseling. Theories of work systems, psychological dynamics, information systems, and decision making models are covered. Interacting with work or family systems and other subsystems is emphasized. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restricted to Graduate level students in the School of Education and Human Development

COUN 5425 - Developing & Implementing a School Counseling Program: ASCA (3 Credits)

The course is specifically designed to provide training for school counselors and related professionals to develop and implement a comprehensive counseling and guidance program, which incorporates the ASCA National Model. Prereq: COUN 5110, 5400, and 5815, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5110, 5400, and 5815, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development.

COUN 5500 - Diversity, Inclusion, Social Justice in Higher Education (3 Credits)

An examination of society, media, and public and educational policy and their impact on higher education access and persistence for marginalized groups. Students are called to consider how student affairs professionals might promote social justice for marginalized student groups. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5810 - Multicultural Counseling Issues for Individuals and Families (3 Credits)

Offers introduction to competent multicultural and social justice counseling. Students develop the awareness, knowledge, skills and action competences necessary for culturally responsive interventions with diverse communities. The course explores issues of ethnicity, culture, age, disability, and sexual orientation and learn about multicultural and social justice interventions for addressing these issues in counseling. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restricted to Graduate level students in the School of Education and Human Development

COUN 5815 - Introduction to School Counseling (3 Credits)

This course emphasizes the unique and varied role of the school counselor and school counseling programs in diverse public schools. The course focus will be on learning the various skills necessary to meet the needs of school age students and others in the school community. In addition, the course will cover The ASCA model of comprehensive developmental school counseling activities, and focus on practical resources for counseling students in diverse school settings. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5820 - Strategies of Agency Counseling (3 Credits)

Students learn the role and function of the counselor in community agency settings. Intervention strategies, consultation, administration of community mental health agencies. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: COUN 5010 and COUN 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5825 - The Business Of Private Practice (3 Credits)

This course is designed to teach students how to start and manage a successful private practice in counseling. Emphasis is placed on understanding and navigating the business side of professional counseling. Max hours: 3 Credits.
Grading Basis: Letter Grade

COUN 5830 - Special Topics (1-6 Credits)

Specific topics vary from semester to semester. Intervention strategies with children, issues in abuse, violence, incest, legal issues, adult counseling, grief, death and dying, private practice. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5835 - Gender And Sexual Orientation (3 Credits)

Investigates constructions of gender and sexuality in the systemic context of individuals, relationships, families, and culture. Emphasis will be placed on developing critical thinking and clinical skills that engage diverse clients in a respectful, ethical, and effective manner in therapy. Max hours: 3 Credits.
Grading Basis: Letter Grade

COUN 5840 - Independent Study: COUN (1-4 Credits)

Individually directed research activity on special topics not covered by course offerings. Degree students only, with advance approval by major, professor and department chair. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5910 - Practicum in COUN (6 Credits)

Supervised counseling practice in the counseling lab and appropriate settings (150 clock hours). Emphasis on individual and group counseling techniques and therapeutic intervention strategies. Prereq: all counseling course work must be completed. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 6 Credits.
Grading Basis: Letter Grade with IP
Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5915 - Practicum in School Counseling (3 Credits)

This class will provide school track students with 3 credits of fieldwork at a developmental level of their choice. The course will require students to work with a school counselor activities that the counselor is assigned under supervision. Students will develop skills in needs assessment, developing classroom guidance activities and running the activities; they will sit in on IEP conferences, help conduct college fairs, administer career assessment inventories and standardized assessments, learn to place students in appropriate classes, and provide responsive counseling services on an as needed basis. Prereq: COUN 5010, COUN 5110, COUN 5400, COUN 5425, COUN 5810, COUN 5815, COUN 6230. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Prereq: COUN 5010, COUN 5110, COUN 5400, COUN 5425, COUN 5810, COUN 5815, COUN 6230. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5930 - Internship in Counseling (3-6 Credits)

Supervised internship of 600 clock hours. Intern performs activities of a regularly employed professional in an approved community site. Prereq: COUN 5910. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Students must register for 3 or 6 credit hours. Repeatable. Max hours: 12 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 12.
Prereq: COUN 5910 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5940 - Internship in Higher Education and Student Affairs (3-6 Credits)

The internship is the final academic experience in the acquisition of the Master's degree in counseling. This course builds on the theoretical and skill-building courses and is intended to give students practical experience in higher education and student affairs. Emphasis on personal and professional development as higher education and student affairs professionals. Students must register for 3 or 6 credit hours. Prereq: COUN 5050 and COUN 5500. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Prereq: COUN 5050 and COUN 5500

COUN 6000 - Introduction to Sex Therapy (3 Credits)

Provides an overview of human sexuality over the life cycle, addressing social, psychological, and physiological aspects of human sexuality. Etiology of human sexuality diagnoses and treatment of problems related to human sexuality are addressed. Note: This course is a component in the couple and family program and required for MFT licensure. Prereq: COUN 5010, COUN 5100, COUN 5110, COUN 5150. Prereq or Coreq: COUN 5160. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Cross-listed with CMFT 6000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, COUN 5110, COUN 5150 Prereq or Coreq: COUN 5160 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6100 - Spiritual Dimensions of Counseling (3 Credits)

A didactic and experiential course involving the following content areas: theories of spiritual development, a survey of religious traditions, assessment, ethical issues, self-of-the-therapist issues, and treatment interventions and strategies in working with clients' values. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6140 - Counseling/Therapy with Children, Adolescents, and their Parents (3 Credits)

This is a didactic and experiential course dealing with therapeutic techniques applied to the improvement of child functioning, and parent-child relationships. Emphasis is placed on play therapy, assessment, diagnosis and treatment of childhood and adolescent disorders, parent education, crisis intervention. Prereq: COUN 5010, COUN 5100, COUN 5150 and LDFS 6200. Restriction: Restricted to COUN majors within the School of Education and Human Development. Cross-listed with CMFT 6140. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100, 5150 and LDFS 6200 Restriction: Restricted to COUN majors within the School of Education and Human Development

COUN 6150 - Introduction to Emotionally Focused Couple Therapy (3 Credits)

This course is designed to help students conceptualize couple distress from an attachment perspective and gain foundational knowledge in Emotionally Focused Therapy (EFT). The organization of the course includes observation of therapy sessions, presentations of theory and clinical techniques, skills training exercises, and discussion of specific cases, clinical material and issues. Prereq: COUN 5010, COUN 5100, COUN 5150, COUN 5160. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, COUN 5150, COUN 5160

COUN 6160 - Advanced Assessment: Theory and Treatment in Family Systems (3 Credits)

This is a didactic and experiential course focusing on family assessment instruments and their use in family therapy. Emphasis is placed on the role of assessment in family therapy, the relationship of assessment to treatment planning and evaluation, gaining familiarity with a variety of assessment instruments, and learning to apply assessment skills to real-world clients. Prereq: COUN 5010, 5100, 5150, 5160, 6250 and RSEM 5110 or COUN MA CFT or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100, 5150, 5160, 6250 and RSEM 5110 or COUN MA CFT or CAFT majors within the School of Education and Human Development

COUN 6170 - Issues In Family Studies (3 Credits)

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Prereq: COUN 5010. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Cross-listed with COUN 7170. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6200 - Trauma Informed Care for Diverse Populations and Co-occurring Disorders (3 Credits)

This course will prepare students to become more trauma informed and understanding of cooccurring disorders within the realm of substance use and mental health treatment in their future careers of certified addictions counselors and other mental health positions in community and private sectors. The course will also demonstrate inclusivity in TIC. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6230 - Developmental Counseling in Schools: Prevention & Intervention (3 Credits)

This course offers the tools to provide developmental counseling services in the schools, including prevention through classroom counseling activities linked with the curriculum, and responsive services. Prereq: COUN 5110, 5400, 5810, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5110, 5400, 5815, LDFS 6200, RSEM 5110 and 5120 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6240 - Consultation Strategies (3 Credits)

Focuses on the development of consultation skills and implementation of strategies. Students are exposed to major theories of the consultation process. In addition, this course provides the opportunity to practice consultation and implementation strategies within a system: an agency, business setting, or educational setting. Prereq: COUN 5010 or permission of instructor. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6250 - Mental Health Diagnosis (3 Credits)

This course addresses individual diagnosis from a variety of perspectives: Biological, developmental, medical, neurological, psychosocial, cultural and interpersonal. It will provide students with a broad theoretical base for understanding psychopathology, from not only an individual, descriptive, symptom-based perspective as presented in the DSM-5, but also from a contextual systemic perspective including developmental hallmarks, familial patterns and socio-cultural contributors. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and 5810. REstriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 6310 - Facilitating Sociopolitical Development Theory & Actn (3 Credits)

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 7310. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6320 - Participatory Research Methods in Context (3 Credits)

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a study in their professional context. Cross listed with COUN 7320. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6330 - Advanced Seminar in Counseling and Psychotherapy (3 Credits)

Professional analysis of major trends in counseling and psychotherapy. Specific emphasis topics identified. Prereq: COUN 5010, 5100 and 5330. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100 and 5330 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6810 - Advanced Multicultural Counseling (3 Credits)

Offers essential preparation for competent multicultural and social justice counseling practice with culturally diverse clients, and families. Students learn about effective multicultural counseling and advocacy skills. The course explores the impact of ethnicity, culture, age, disability, sexual orientation, etc., on individual behavior, interpersonal relationships, and learn about multicultural and social justice interventions and techniques for addressing these issues in counseling. Prereq: COUN 5010, 5100 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5810 Restriction: Restricted to COUN majors within the School of Education and Human Development

COUN 6840 - Independent Study (1-4 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6910 - Advanced Practicum in Counseling (3-6 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6950 - Master's Thesis (4 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

Additional Information: Report as Full Time.

COUN 7100 - Advanced Theories and Techniques in Psychotherapy (3 Credits)

Learn and practice advanced techniques for addressing adult and adolescent clinical problems. Examine efficacy research on specific counseling techniques as associated with particular approaches in counseling. Prereq: COUN 5010, 5100 and 5820. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100 and 5820 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 7170 - Issues in Family Studies (3 Credits)

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Cross-listed with COUN 6170. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 7310 - Facilitating Sociopolitical Development Theory & Actn (3 Credits)

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 6310. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 7320 - Participatory Research Methods in Context (3 Credits)

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a study in their professional context. Cross listed COUN 6320. Max hours: 3 Credits.

Grading Basis: GRD

COUN 7800 - Supervision in Counseling and Psychotherapy (3 Credits)

Examines training principles, processes, and practices in clinical supervision. Emphasis on individual and family therapy supervision.

Prereq: COUN 5010, 5100, 5910 and 5930. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Prereq: COUN 5010, 5100, 5910 and 5930 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

Counseling, MA

Introduction

The Master of Arts degree in Counseling program prepares professionals for community/mental health agencies, private practice, and public schools. Students accepted into the Counseling program follow one of two concentration areas. The clinical mental health counseling track follows state licensure requirements for Licensed Professional Counselor (LPC); the school counseling track follows the requirements for both the LPC and Colorado Department of Education licensure requirements Licensed School Counselor.

Both the clinical mental health and school counselor tracks consist of 63 semester hours. Core courses that are common to all licensure areas of study are followed by courses specific to concentration area. Both specializations require a practicum (150 clock hours) and an internship (600 clock hours). The master's degree is a three to three and a half-year program with course work for two to two and a half years followed by a 12-16 months of practicum and internship.

The clinical mental health and school counseling tracks are nationally accredited by CACREP, the Council for the Accreditation of Counseling and Related Educational Programs.

Program Requirements

Students in the Counseling program are required to maintain at least a B (3.00) grade point average in all coursework attempted while enrolled. Courses in which grades below a B- (2.7) are received may only be counted toward the degree with faculty permission. Students receiving a C or below in any of the clinical skill building courses: COUN 5100 Techniques of Counseling, COUN 5110 Group Counseling, COUN 5160 Techniques in Family Counseling/Therapy, COUN 5910 Practicum in COUN, COUN 5930 Internship in Counseling, COUN 6140 Counseling/Therapy with Children, Adolescents, and their Parents, or COUN 7100 Advanced Theories and Techniques in Psychotherapy will be required to repeat the course and follow any remediation plan that may be developed to meet the students' specific needs. Students must also take a national comprehensive examination, the Counselor Preparation Comprehensive Exam (CPCE), after completing all core courses. Students may choose to conduct research and submit a thesis (research conducted under faculty advisement) instead of taking a comprehensive examination.

Code	Title	Hours
Counseling Core		
COUN 5010	Counseling Theories	3
COUN 5100	Techniques of Counseling	3
COUN 5110	Group Counseling	3
COUN 5150	Family Counseling/Therapy	3
COUN 5330	Counseling Issues and Ethics	3
COUN 5400	Career Development	3
COUN 5810	Multicultural Counseling Issues for Individuals and Families	3
LDFS 6200	Human Development Over the Life Span	3
RSEM 5110	Introduction to Measurement	3
RSEM 5120	Introduction to Research Methods	3

Additional Requirements

Select one of the following tracks:

33-39

Clinical Mental Health Counseling (MA) (p. 421)

School Counselor License (MA) (p. 421)

Total Hours 63-69

CPCE Comprehensive Exam to be taken after all Counseling core classes are completed.

Additional Requirements

Clinical Mental Health Counseling (MA)

Code	Title	Hours
COUN 5160	Techniques in Family Counseling/Therapy	3
COUN 5280	Addictions Counseling	3
COUN 5820	Strategies of Agency Counseling	3
COUN 6250	Mental Health Diagnosis	3
COUN 7100	Advanced Theories and Techniques in Psychotherapy	3
COUN 5910	Practicum in COUN	6
COUN 5930	Internship in Counseling	3-6
Electives ¹		6

Total: 33 Hours

¹ Two Additional Elective Classes (6 semester hours) are required.

School Counselor License (MA)¹

Code	Title	Hours
COUN 5280	Addictions Counseling	3
COUN 5425	Developing & Implementing a School Counseling Program: ASCA	3
COUN 5815	Introduction to School Counseling	3
COUN 5915	Practicum in School Counseling	3
COUN 6140	Counseling/Therapy with Children, Adolescents, and their Parents	3
COUN 6230	Developmental Counseling in Schools: Prevention & Intervention	3
COUN 6250	Mental Health Diagnosis	3
COUN 5910	Practicum in COUN	6
COUN 5930	Internship in Counseling	3-6

¹ 100-hour practicum is required in the schools (COUN 5915 Practicum in School Counseling). Three hundred of the 600 hours of internship must be in a concentrated environment. Full-time experience consisting of at least a four-hour block of time each day is required. Students may not do their internship in their primary employment (agency or school setting). For school counseling, three hundred (300) hours of internship are needed at the middle and secondary level for a K-12 program. COUN 5150 Family Counseling/Therapy, COUN 6140 Counseling/Therapy with Children, Adolescents, and their Parents and COUN 7100 Advanced Theories and Techniques in Psychotherapy are necessary for students to work with school-related family issues, individual counseling and children's counseling in practicum and internship.

The Professional School Counselor Praxis exam (5421) is required for the Colorado Department of Education license for school counselors.

Total: 33 Hours

Couple, Marriage and Family Therapy, MA

Office: Lawrence Street Center, 701

Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Website: <https://education.ucdenver.edu/>

Overview

Degree

The Master of Arts degree in Couple, Marriage & Family Therapy program prepares professionals to provide services to help individuals, couples and families to increase mental health and relationship satisfaction in settings such as mental health centers, non-profit agencies, private practices and hospitals. This program follows state licensure requirements for licensure as a Licensed Marriage and Family Therapist (LMFT).

The program requires 500 hours of clinical work, 40% of which must be relational (couple and/or family counseling/therapy) clinical hours, with no distinguish between practicum or internship in the collection of these clinical hours. The master's degree is a three to three and a half-year program with course work for two-two and a half years followed by a 12-16 months of practicum and internship.

The program is accredited by COAMFTE, the Commission on Accreditation for Marriage and Family Therapy Education.

Admission Requirements

Successful applicants to the Counseling program will have obtained a minimum 2.75 undergraduate GPA. Also, applicants will submit a current resume, a letter of intent, three letters of recommendation, and additional required materials. Applicants meeting these minimum standards may be invited to a half-day group interview that involves program orientation, small group interviews, and a group exercise.

Application materials are available at <https://education.ucdenver.edu/academic-services/admissions>. (<https://education.ucdenver.edu/academic-services/admissions/>) All materials must be submitted online by the appropriate deadline: September 1 for spring semester and February 1 for fall semester.

Faculty

Information about faculty in the Counseling program is available online at <https://education.ucdenver.edu/about-us/faculty-directory> (<https://education.ucdenver.edu/about-us/faculty-directory/>)

Program Requirements

Students in the Couple, Marriage & Family Therapy program are required to maintain at least a B (3.00) grade point average in all coursework attempted while enrolled.

Code	Title	Hours
Required Courses		
CMFT 5150	Foundational Family Therapy Theories	3
CMFT 5151	Contemporary Family Therapy Theories	3
CMFT 5160	Individual and Foundational Family Therapy	3
CMFT 5161	Individual and Contemporary Family Therapy	3

CMFT 5330	Professional Identity & Relational Ethics	3
CMFT 6180	Family Issues: Multicultural Intersectional Systems through the Lifespan	3
COUN 5010	Counseling Theories	3
COUN 6140	Counseling/Therapy with Children, Adolescents, and their Parents	3
COUN 6250	Mental Health Diagnosis	3
RSEM 5110	Introduction to Measurement	3
Additional Courses		24
Courses are still in development, please work with your student advisor for an updated list of courses		
Total Hours		54

Culturally and Linguistically Diverse Education

Office: Lawrence Street Center, 701

Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Overview

The Culturally and Linguistically Diverse Education (CLDE) program helps licensed teachers enhance their skills and credentials to support diverse languages, cultures, and abilities in the classroom. Graduates are prepared to become leaders to serve multilingual learners in K-12 classrooms. This program emphasizes a socio-cultural approach to issues of language and learning, acknowledging the legitimacy of linguistic and cultural differences, and recognizing that academic settings represent important socializing forces in students' lives. We emphasize the "whole learner" in our teaching and in teacher education, understanding that individuals do not merely add a language to their repertoire of communication but make fundamental identity adjustments as they progress in their studies. Course work includes the topics of language and bilingualism; history, law and politics around immigration and racism; race, culture, identity and community; and the education of bilingual children.

The MA program also provides a foundation in teaching English to multilingual learners in a variety of contexts in the United States and abroad. Teachers who work in CLDE programs or in other content areas (such as art, language arts, math, music, science, social studies or technology), and who wish to integrate CLDE principles and strategies into their instruction for their multilingual learners, will find the MA program relevant to their interests and goals.

This program has been developed as an advanced course of study for practicing teachers or individuals with some teaching experience. Applicants who are new to teaching, and who wish to teach in U.S. K-12 public school settings, should inquire about the Master of Arts in Teaching (p. 485).

The program is intended for:

- graduate-level students interested in the master's degree (30 semester hours) with or without the added endorsement to a current license
- licensed elementary and secondary teachers returning to acquire Colorado endorsement credentials (24 semester hours)
- endorsed CLDE teachers who wish to add the Culturally and Linguistically Diverse Bilingual Education endorsement. Licensed

elementary and secondary teachers returning to graduate studies for a certificate to aid them in helping their English language learners succeed (TCLD: 9 semester hours, non-degree)

Programs

- Culturally and Linguistically Diverse Education, MA (p. 426)
- Culturally and Linguistically Diverse Education with K-12 Endorsement, MA (p. 427)
- Culturally and Linguistically Diverse Education, MA with K-12 Endorsement & Bilingual Specialist Endorsement (p. 427)
- Culturally and Linguistically Diverse Education, MA with Bilingual Specialist Endorsement (p. 428)
- Culturally and Linguistically Diverse Education Endorsement: K-12 (p. 429)
- Culturally and Linguistically Diverse Bilingual Specialist Endorsement (p. 429)
- Teaching for Cultural and Linguistic Diversity (TCLD) Certificate (p. 430)

Faculty

Information about faculty in the Culturally and Linguistically Diverse Education program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/culturally-linguistically-diverse-education> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/culturally-linguistically-diverse-education/>)

Culturally and Linguistically Diverse Education (CLDE)

CLDE 5000 - CLDE Portfolio Bridge (3 Credits)

Class participants review CLDE content from previous teacher license classes, fill in gaps in knowledge related to CLDE teacher preparation standards, and compile a portfolio which shows their proficiency in the CLDE standards. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5001 - Content Bridge in Culturally and Linguistically Diverse Education (3 Credits)

This class includes four investigations that address challenging problems in Culturally & Linguistically Diverse Education. Participants complete guided activities and independent research to create a solution or approach to the problems. The four assignments apply to the CLDE endorsement portfolio. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5010 - Foundations of Language & Culture in Education (3 Credits)

Designed for veteran and novice teachers to gain an understanding of schooling and language education. Participants examine key social theories based on the writings of important scholars in the field, on topics such as the politics of race, schooling, language, and cultural identity. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5020 - Responsive Classroom Communities (3 Credits)

This course investigates how people learn and the implications of social and cultural learning for establishing engaging and culturally responsive learning communities. Through this course teacher candidates will better understand their roles in student learning and how their own cultural lenses impact their relationships with students and families, and influence student success in the classroom. Cross-listed with CLDE 4020. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5030 - Language Development of Multilingual Learners: Advanced (3 Credits)

This course offers a deep investigation of the relationship between language and literacy acquisition. In the context of first and second language development across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5032 - English Linguistic Foundations for SLA & TESOL (3 Credits)

Investigates Second Language Acquisition (SLA) theories and new developments in the field relevant to adult learners of English, factors that influence outcomes, and key structures in English grammar and pronunciation. Lab time with ESL learners involves teaching listening/speaking and applying grammar in writing. Max hour: 3 Credits.

Grading Basis: Letter Grade

CLDE 5035 - Connecting Multilingual Theories to Practice (3 Credits)

This course supports students in synthesizing research and theory on learning and multilingual development, and identifying their own theoretical orientation in the field. There is a specific emphasis on connecting classroom practice to their theoretical stance. Prereq: CLDE 5010, CLDE 5160, CLDE 5050, CLDE 5070, CLDE 5820, and CLDE 5825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CLDE 5010, 5160, 5050, 5070, 5820, and 5825.

CLDE 5040 - Social Justice Liberation: A Rehearsal for the Revolution (3 Credits)

We will explore TO and CRT. Students will engage in class discussions, theatre workshops, and critically analyze the applicability of these concepts to education and community work through deep and thorough engagement of readings, TO activities, and discussions about school and community activism with peers and the greater community. Cross-listed with CLDE 7040. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5042 - Techniques for Teaching Adult ESL (3 Credits)

This course provides principles of language assessment and progress monitoring strategies for teachers of adult ESL learners to help inform their practices and decisions related to appropriate instruction and placement of, and programming for, learners. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5050 - Assessment & Advocacy for Multilingual Learners (3 Credits)

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students. Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with SPED 5050. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5070 - Linguistic Analysis of English (3 Credits)

A descriptive linguistic approach to English grammar with a functionalist view of language and discourse processing. The course examines the historical evolution of English from its origins and the impact this has had on its grammar and syntax. A critical applied linguistic perspective is included focusing on language variation and status. Provides a framework for understanding, identifying and describing the major features of English (in particular) and language (in general). Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5140 - Language, Culture & Educational Equity (3 Credits)

Develops an understanding of the pluralistic and intersectional nature of U.S. society (race, class, gender, sexuality, language, migration status), and the role of the school within this social context. Examines the legal and cultural history of language education in Colorado and the U.S. as well as the impact of changing demographics on schools. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5160 - History & Law of Bilingual & Immigrant Education (3 Credits)

This course includes an overview of U.S. and Colorado history and legislation related to bilingual education and second language education, as well as current and historical immigration issues as they impact students, families, communities, schools, and educators. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5170 - Race, Class and Culture in Public Schools (3 Credits)

This course will focus on understanding culture and diversity, recognizing the role of inherited power and privilege in both individual and institutional interactions and developing a philosophy of social justice and equity in education. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5190 - Culturally Responsive Pedagogy and Practices (3 Credits)

This course focuses on developing practical tools for culturally responsive, inclusive instructional strategies, classroom management and curriculum and lesson planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5430 - Gender as Culture (3 Credits)

Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 7430. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5680 - Spanish for Educators (3 Credits)

This course is designed to help teacher candidates advance their Spanish skills. Teacher candidates will clarify their motivations and purposes for studying Spanish and gain a greater understanding of language assessments and of their own Spanish abilities and increase insight and empathy for emergent bilingual students. Cross-listed with CLDE 3680. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5700 - Social Studies for Multilingual Learners (3 Credits)

Participants will use a social justice lens to investigate the content and language demands of the four disciplines of social studies: History, Civics, Geography and Economics. This class focuses on Social Studies methods as well as essential practices for teaching multilingual students. Cross-listed with CLDE 4700. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5800 - Language Variation & Implications for Teaching (3 Credits)

Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed. Cross-listed with CLDE 7800. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5810 - Literacy for Bilingual Learners offered for Student Teacher Residency (STR) (3 Credits)

This course, for residents in the STR program, highlights the best practices for language and literacy development for culturally and linguistically diverse learners, including bilinguals, multilinguals, and speakers of non-standard varieties of English. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5820 - Teaching Multilingual Learners, Advanced (3 Credits)

This course focuses on the hands-on practical application of methods and techniques that support language, academic and identity development for bilingual learners. Course work includes critical perspectives on teaching techniques, investigations into the research on teaching techniques in multilingual education, as well as an emphasis on teachers taking leadership in the field of CLDE. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5824 - Theories and Methods of Bilingual Education (3 Credits)

Taught in Spanish, this course explores theories and methods of effective instruction of Spanish-English bilingual children. The course addresses theories of bilingualism and bilingual language/literacy development as well as methods for teaching in bilingual classrooms. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5825 - Methods of Content Teaching for Bilingual Learners (3 Credits)

Provides an in-depth study of curriculum options for learners developing English in schools. Participants examine and apply strategies and materials for developing linguistic and academic capabilities of language learners, with optional extensions for bilingual program educators. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5827 - Developing Content Teaching Methods for Bilingual Learners through PLC (3 Credits)

Through this flexible start course, students will synthesize the professional development work done through district offered e-workshops, and relate it to the literature on best practices for culturally and linguistically diverse classrooms. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5828 - Practitioner Inquiry into the Role of Language in Teaching (3 Credits)

Participants will synthesize work done through eworkshops, and connect this practical professional development work to important scholarship in the broader field of education research, examining role of language, culture, and identity in teaching and learning. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5830 - STR Culminating Experience (3 Credits)

This class provides support for students in the CLDE district-based teacher residency. Students create summaries of their year-long learning and reflect upon artifacts that show their learning in relation to the state standards in Culturally and Linguistically Diverse Education. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5835 - Special Topics: Culturally and Linguistically Diverse Education (0.5-3 Credits)

Advanced study of special topics that examine multilingualism, cultural pluralism, and community in Culturally and Linguistically Diverse Education. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

CLDE 5840 - Independent Study: CLDE (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

CLDE 5850 - Culminating Experience: Bilingual Specialist (1 Credit)

In this capstone, students compose a 3-5 minute video, plus provide artifacts from teaching and coursework with explanations of how these artifacts show mastery of CDE Standards 8.23 for Bilingual Education Specialist competencies. Prereq: Completion of CLDE endorsement AND 9 units in Bilingual Specialist pathway CLDE 5824, SPAN 5020, SPAN 5060, SPAN 5076, SPAN 5080, SPAN 5099, and 5980. Max hours: 1 Credit.

Grading Basis: Pass/Fail Only

Prereq: Completion of CLDE endorsement (CLDE 5010, CLDE 5160, CLDE 5070, CLDE 5030, CLDE 5820, CLDE 5050, CLDE 5825, CLDE 6912) AND 9 units in Bilingual Specialist pathway (CLDE 5824, SPAN 5020, SPAN 5060, SPAN 5076, SPAN 5080, SPAN 5099, and 5980).

CLDE 5910 - Improving Student Outcomes: Interdisciplinary Inquiry (3 Credits)

This course operates from three distinct disciplinary perspectives: urban planning (community and schools), education (quality teaching), and public policy (accountability). Students explore important factors related to improving K-12 student outcomes: resources, leadership, teaching and parent/community involvement from three disciplinary perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5920 - Immigration through Children's Literature (3 Credits)

This class explores themes of immigration and multilingualism by examining children's and young adult literature. Combines techniques for teaching literacy in multilingual environments with foundational themes in the study of immigration and multilingualism. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 6910 - Leadership Practicum in CLDE (3 Credits)

This practicum course grants credit for field significant experiences, connected to the program of study and the Colorado standards for endorsement. Teachers who can engage in, synthesize, and reflect on these experiences are eligible for this course credit. Max hours: 3 Credits.

Grading Basis: Pass/Fail with IP

CLDE 6912 - Teacher Inquiry in Multilingual Classrooms (3 Credits)

This seminar provides opportunities for advanced students in the M.A. program to apply an inquiry lens to the concepts of CLDE. Students design an inquiry project, where they focus on a problem of practice, create an action research question, collect student work as data, and analyze findings and results. Students work in research teams, providing feedback and observing each other's classrooms. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 6950 - Master's Thesis (4 Credits)

This class provides the opportunity for CLDE MA students to complete a Masters' thesis in place of the CLDE Culminating Experience. This class is open to students with advisor support and approval. Max hours: 4 credits

Grading Basis: Letter Grade

Additional Information: Report as Full Time.

CLDE 7040 - Social Justice Liberation: A Rehearsal for the Revolution (3 Credits)

We will explore TO and CRT. Students will engage in class discussions, theatre workshops, and critically analyze the applicability of these concepts to education and community work through deep and thorough engagement of readings, TO activities, and discussions about school and community activism with peers and the greater community. Cross-listed with CLDE 5040. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7090 - Research Seminar (3 Credits)

An advanced course which focuses on specific issues in language, language acquisition and language teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7210 - Introduction to Leadership for Latin@ Learners (1 Credit)

In this introductory module, students will move beyond typical discussions of leadership that are neutral with regards to the students and families being served to one that puts linguistic and cultural diversity at the center of the discussion. Students will first survey the current state of Latin@s in education and communities from a local and national perspective. We will then co-construct a set of broad questions and examine theoretical frameworks that set the stage for the remaining courses in the program. Max hours: 1 Credit.

Grading Basis: Letter Grade

CLDE 7220 - Legal And Policy Foundations For Latin@ Students (2 Credits)

This course is a comprehensive survey of the highlights and lowlights of federal, state, and local history, legislation and policy regarding the education and rights to education and language for Latin@ students. The readings and discussion are around various ideologies, philosophies, and theoretical underpinnings of education. In this class you will develop skills in critical consideration of the rights of all in US society and the responsibilities of the public institution of schools. As the performance assessment for this course you will have an opportunity to focus on a Colorado school district, community or community organization of your choosing. You will outline history, legislation, and policy for that site. Max hours: 2 Credits.

Grading Basis: Letter Grade

CLDE 7230 - Language and Literacy in Bilingual Learners (3 Credits)

This course focuses on first and second language acquisition, and its impact on literacy in young children, elementary and secondary students, and students with special needs. Topics are literacy and language development, assessment, culturally responsive teaching, and school reform policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7250 - Systems, Policy, and Advocacy in Latin@ Communities (2 Credits)

This hybrid, 2-credit module introduces participants to methods of policy research and analysis across levels (federal, state, local) and the historical contexts behind key policies. Participants apply studied forms of policy analysis to investigate and engage with policies affecting their communities. Max hours: 2 Credits.

Grading Basis: Letter Grade

CLDE 7260 - Synthesizing Research in Latin@ Learners and Community (1 Credit)
In this final module, students will revisit the theoretical frameworks and research questions they have examined throughout their coursework and: a) identify a problem of practice and research questions they wish to explore in greater depth; b) identify theoretical framework(s) that will guide your research; and, d) develop a comprehensive literature review.
Max hours: 1 Credit.
Grading Basis: Letter Grade

CLDE 7310 - Critical Race Theory: History, Theory, and Application (3 Credits)
Students will gain knowledge of Critical Race Theory and its early origins. Key themes to be explored include interest convergence, intersectionality, revisionist history, critiques of Liberalism, and critiques of CRT. Students also explore methodological issues and the potential applicability of CRT to their own research. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7320 - (Re)Claiming Dominant Narratives: History, Education, & Activism in Latinx (3 Credits)
Students will review a condensed history of Latinx peoples in America. Working with civil rights activists, scholars, and local community members, students will utilize decolonized methodologies to conduct a community story preservation project to reclaim the dominant narrative of local movements. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7410 - Communication & Control: Systemic Change (3 Credits)
Examines educational settings – classrooms, schools, school districts, corporate and clinical settings, church basements and community centers – as systems, and explores strategies for change. Participants draw on interdisciplinary perspectives of individual and group behavior as they develop personal theories of change and apply these to their own situations. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7430 - Gender as Culture (3 Credits)
Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 5430. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7713 - Introduction to Language Policy (3 Credits)
The legal, ideological, and historic foundations of language policies are examined. Also examined are connections with related topics such as language rights, language and power, and issues from the sociology of language, such as language loyalty. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7800 - Language Variation & Implications for Teaching (3 Credits)
Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed. Cross-listed with CLDE 5800. Max hours: 3 Credits.
Grading Basis: Letter Grade

CLDE 7840 - Independent Study: CLDE (1-4 Credits)
Repeatable. Max Hours: 4 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 4.

Culturally and Linguistically Diverse Education, MA

Introduction

The MA in CLDE is a 30 credit hour program that provides students with the opportunity to personalize coursework to your specific needs as a professional educator. Students take the required concentration core courses (9 credit hours). Then, in consultation and with approval from your faculty advisor, students select 5 courses from the Thematic Course Categories list to customize their learning (15 credit hours). Finally, students take the required research course (3 credit hours) and then complete a Capstone course (3 credit hours), for a total of 30 credits. A current teaching license is not required.

Program Requirements

The Customizable degree plan does not include a license or an endorsement.		
Code	Title	Hours
Foundation Courses		
CLDE 5010 or CLDE 5160	Foundations of Language & Culture in Education History & Law of Bilingual & Immigrant Education	3
Language and Linguistic Courses		
CLDE 5030 or CLDE 5070	Language Development of Multilingual Learners: Advanced Linguistic Analysis of English	3
Pedagogy Courses		
Select one of the following:		3
CLDE 5820	Teaching Multilingual Learners, Advanced	
CLDE 5825	Methods of Content Teaching for Bilingual Learners	
CLDE 5050	Assessment & Advocacy for Multilingual Learners	
Thematic Course Categories Credits		
https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Course 1		3
Course 2		3
Course 3		3
Course 4		3
Course 5		3
Research Course		
CLDE 6912	Teacher Inquiry in Multilingual Classrooms	3
Capstone Course		
CLDE 5035	Connecting Multilingual Theories to Practice	3
Total Hours		30

Culminating Experience: Final Reflection

The Culminating Experience: Final Reflection is submitted at the end of your MA course of study as part of the capstone course, CLDE 5035 Connecting Multilingual Theories to Practice. The Culminating Experience is an electronic portfolio, where you show proficiency in meeting the

TESOL and CDE standards by displaying and reflecting upon work that you have completed throughout the CLDE program.

Program Requirements and Courses

To complete the CLDE program and earn a master's degree students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including face-to-face, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

Planning

For practicing full-time teachers, we recommend taking one - two courses each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Culturally and Linguistically Diverse Education with K-12 Endorsement, MA

Introduction

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education <http://www.cde.state.co.us> or another state in which they wish to be endorsed for the most updated endorsement requirements.

Program Requirements

Code	Title	Hours
Courses: All Required		
CLDE 5010	Foundations of Language & Culture in Education	3
CLDE 5160	History & Law of Bilingual & Immigrant Education	3
CLDE 5070	Linguistic Analysis of English	3
CLDE 5030	Language Development of Multilingual Learners: Advanced	3
CLDE 5820	Teaching Multilingual Learners, Advanced	3
CLDE 5050	Assessment & Advocacy for Multilingual Learners	3
CLDE 5825	Methods of Content Teaching for Bilingual Learners ¹	3
Elective with Faculty Advisor approval		3
CLDE 6912	Teacher Inquiry in Multilingual Classrooms	3

CLDE 5035	Connecting Multilingual Theories to Practice	3
Total Hours		30

¹ Some district partnership courses may substitute here. Contact your Faculty Advisor for approval.

Culminating Experience: Final Reflection

The Culminating Experience: Final Reflection is submitted at the end of your MA course of study as part of the capstone course, CLDE 5035 Connecting Multilingual Theories to Practice. The Culminating Experience is an electronic portfolio, where you show proficiency in meeting the TESOL and CDE standards by displaying and reflecting upon work that you have completed throughout the CLDE program.

Program Requirements and Courses

To complete the CLDE program and earn a master's degree with endorsement, students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

Planning

For practicing full-time teachers, we recommend taking one to two courses each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Culturally and Linguistically Diverse Education, MA with K-12 Endorsement & Bilingual Specialist Endorsement

Introduction

Recommendations for endorsements are made by the CLDE Program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (CDE) (http://www.cde.state.co.us/cdeprof/licensure_authorization_landing (http://www.cde.state.co.us/cdeprof/licensure_authorization_landing/)) or another state in which they wish to be endorsed for the most updated endorsement requirements.

Per CDE requirements, the Bilingual Education Specialist Endorsement must be obtained after or in conjunction with the Endorsement in Culturally and Linguistically Diverse Education (CLDE). Students can

concurrently complete the CLDE MA with both the CLDE and BES endorsements.

Program Requirements

Code	Title	Hours
Foundations (select one)		
CLDE 5010 or CLDE 5160	Foundations of Language & Culture in Education History & Law of Bilingual & Immigrant Education	3
Language Development & Linguistics		
CLDE 5070	Linguistic Analysis of English	3
CLDE 5030	Language Development of Multilingual Learners: Advanced	3
Pedagogy		
CLDE 5820	Teaching Multilingual Learners, Advanced	3
CLDE 5050	Assessment & Advocacy for Multilingual Learners	3
CLDE 5824	Theories and Methods of Bilingual Education	3
Spanish Sociolinguistics (select one)		
SPAN 5060 or SPAN 5020 or SPAN 5080 or SPAN 5076	Dialects of the Spanish-Speaking World Spanish Sociolinguistics Spanish in the United States Spanish in Colorado	3
Spanish Pedagogy (select one)		
SPAN 5030 or SPAN 5040	The Learning and Teaching of Heritage Speakers Spanish Classroom Methods and Practice	3
Research Course		
CLDE 6912	Teacher Inquiry in Multilingual Classrooms	3
Capstone		
CLDE 5035	Connecting Multilingual Theories to Practice (Capstone to be written in Spanish for BES endorsement)	3
Total Hours		30

Culturally and Linguistically Diverse Education, MA with Bilingual Specialist Endorsement

Introduction

Candidates who complete the CLDE MA with CLDE and BES endorsements will leave the program(s) with greater understandings of crucial ideas and skills, including:

- Asset-based, positive dispositions toward bilingual students, their linguistic practices, their families, and their communities
- Critically informed perspectives on the history, laws, and social forces shaping the education of bilingual students in Colorado
- Linguistic analysis of English and Spanish
- Theories of language, bilingualism, and second language acquisition

Theories and practices to support access to rigorous content for bilingual students, to improve assessment and its application to instruction for bilingual students, and to leverage students’ bilingualism in teaching.

Program Requirements

Code	Title	Hours
Foundations (select one)		
CLDE 5010 or CLDE 5160	Foundations of Language & Culture in Education History & Law of Bilingual & Immigrant Education	3
Language Development & Linguistics		
CLDE 5070	Linguistic Analysis of English	3
CLDE 5030	Language Development of Multilingual Learners: Advanced	3
Pedagogy		
CLDE 5820	Teaching Multilingual Learners, Advanced	3
CLDE 5050	Assessment & Advocacy for Multilingual Learners	3
CLDE 5824	Theories and Methods of Bilingual Education	3
Spanish Sociolinguistics (select one)		
SPAN 5060 or SPAN 5020 or SPAN 5080 or SPAN 5076	Dialects of the Spanish-Speaking World Spanish Sociolinguistics Spanish in the United States Spanish in Colorado	3
Spanish Pedagogy (select one)		
SPAN 5030 or SPAN 5040	The Learning and Teaching of Heritage Speakers Spanish Classroom Methods and Practice	3
Research Course		
CLDE 6912	Teacher Inquiry in Multilingual Classrooms	3
Capstone		
CLDE 5035	Connecting Multilingual Theories to Practice (Capstone to be written in Spanish for BES endorsement)	3
Total Hours		30

Program Requirements and Courses

To complete the CLDE program and earn a master’s degree with endorsement(s), students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

Planning

For practicing full-time teachers, we recommend taking one to two courses each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Culturally and Linguistically Diverse Education Endorsement: K-12

Introduction

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co.us>) or another state in which they wish to be endorsed for the most updated endorsement requirements. Teachers who seek to earn a CLDE endorsement need to already have a Colorado k-12 teaching license.

Program Requirements

This course plan does NOT lead to MA degree.

Code	Title	Hours
CLDE 5010	Foundations of Language & Culture in Education	3
CLDE 5160	History & Law of Bilingual & Immigrant Education	3
CLDE 5070	Linguistic Analysis of English	3
CLDE 5030	Language Development of Multilingual Learners: Advanced	3
CLDE 5820	Teaching Multilingual Learners, Advanced	3
CLDE 5050	Assessment & Advocacy for Multilingual Learners	3
CLDE 5825	Methods of Content Teaching for Bilingual Learners	3
CLDE 6912	Teacher Inquiry in Multilingual Classrooms	3
Total Hours		24

Program Requirements and Courses

To complete the CLDE program and earn an endorsement students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, eight-week sessions are offered, and courses may be in the morning, afternoon or evening, hybrid, or completely online.

Planning

For practicing full-time teachers, we recommend taking one to two courses each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Culturally and Linguistically Diverse Bilingual Specialist Endorsement

Introduction

The Bilingual Specialist Endorsement must be taken after or concurrent to the 24 credit hour CLDE K-12 Endorsement. Applicants to this endorsement should be bilingual and biliterate in Spanish and English; Bilingual Specialist Endorsement courses will be taught bilingually.

Recommendations for endorsements are made by the CLDE program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co.us>) or another state in which they wish to be endorsed for the most updated endorsement requirements.

Program Requirements

Code	Title	Hours
Required Course		
CLDE 5824	Theories and Methods of Bilingual Education	3
Select one Spanish Sociolinguistic Course:		3
SPAN 5060	Dialects of the Spanish-Speaking World	
SPAN 5020	Spanish Sociolinguistics	
SPAN 5080	Spanish in the United States	
SPAN 5076	Spanish in Colorado	
Select one Spanish Pedagogy Course:		3
SPAN 5030	The Learning and Teaching of Heritage Speakers	
SPAN 5040	Spanish Classroom Methods and Practice	
Total Hours		9

Program Requirements and Courses

To complete the Bilingual endorsement students must complete the appropriate course work as outlined in the tables. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation. If necessary, courses may be retaken for a better grade.

Course Scheduling

Because classes are scheduled through the Modern Languages Department (Spanish), students should work with their Faculty Advisor about course selection and scheduling.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester and up to two courses each summer. Some courses are offered only once per year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Teaching for Cultural and Linguistic Diversity (TCLD) Certificate

Introduction

The TCLD Certificate is a graduate certificate providing a foundation in teaching content and language to bilingual or multilingual students. The program is designed for content-area teachers (math, science, social studies, language arts etc.) and elementary classroom teachers who have bilingual learners in their classes. This certificate is also valuable to content area coaches or administrators who provide support for teachers with bilingual learners. The certificate is appropriate for public school and community college personnel.

Certificate Requirements

The certificate totals nine credits. All courses are three graduate credit hours and may be applied directly toward a full master's degree in CLDE while also fulfilling the requirements toward a Colorado Culturally and Linguistically Diverse Education Endorsement. Additional courses and applications are required for the master's degree and/or endorsement. Those pursuing the TCLD certificate must complete any three of the following courses:

Code	Title	Hours
Select three of the following:		9
CLDE 5030	Language Development of Multilingual Learners: Advanced	
CLDE 5050	Assessment & Advocacy for Multilingual Learners	
CLDE 5070	Linguistic Analysis of English	
CLDE 5820	Teaching Multilingual Learners, Advanced	
LCRT 5770	Effective Literacy Instruction for Diverse Learners	
Total Hours		9

Curriculum and Instruction

Office: 1380 Lawrence Street Center, 701

Telephone: 303-315-5001

E-mail: ASPIRE@ucdenver.edu

Overview

The schools in your community need your skills and experience to increase the number of effective teachers in your area. We prepare our candidates to collaborate effectively at all levels - with other teachers and learning specialists, parents, students, administrators, counselors, and community members - in order to facilitate the success of all students.

Aspire to Teach® preparation also includes application of content knowledge, theory, curriculum, assessment, and research as they flexibly and reflectively make decisions that support the success of diverse learners.

Ultimately, our goal is that all candidates—whether elementary teachers, secondary teachers or special educators—will be able to have a significant positive impact in diverse educational school settings and, as teacher leaders, will act with a sense of urgency to support equity in education for all children.

Programs

- Critical Pedagogy, MA (p. 430)

Faculty

Information about faculty in this program is available online at <https://education.ucdenver.edu/continuing-education/aspire/team> (<https://education.ucdenver.edu/continuing-education/aspire/team/>)

The faculty of the Curriculum & Instruction MA works with educators to adopt a pedagogy that is holistic, experiential, relational and liberatory. Students examine the political nature of schooling and the systemic inequities (social, economic, gender, ethnocultural background, racial geography, etc.) that help create unequal education opportunities for a variety of learners. The program aims to introduce participants to an approach to teaching and learning that moves beyond transmission and mastery of content towards teaching/learning that promotes the practice of freedom, liberation, justice and community.

C&I faculty also emphasize the importance of teachers as scholars and reflective practitioners. To help you transition to this graduate student role, the program requires students to leverage the text, *They Say / I Say: The Moves That Matter in Academic Writing*, 3rd edition (authors: Graff and Birkenstein) prior to your first course in the program. The book prepares students for the program's academic writing expectations. Graff and Birkenstein use a metaphor of academic writing as a conversation. Each chapter describes relevant argumentative moves, examples, and templates to assist you in integrating the language, ideas, and arguments of others into your writing. Students will find the text to be a quick read and an invaluable resource throughout the program.

Critical Pedagogy, MA

Introduction

Designed for alumni of the ASPIRE to Teach alternative licensure program to earn an MA in curriculum and instruction with an emphasis in critical pedagogy. Graduates collaborate effectively at all levels with other teachers and learning specialists, parents, students, administrators, counselors, and community members to facilitate the success of all students.

As a graduate student, you will embark on a study of curriculum and instruction in P-12 contexts. This means that you will be thinking deeply about both classroom and school practices (your own and those of others) as well as the larger theoretical frameworks that influence educational policy and pedagogical design. You will have the opportunity to continue your development as an educator under the tutelage of the ASPIRE faculty and alongside other ASPIRE alum whom you met in your licensure work. Curriculum & Instruction faculty emphasize the importance of teachers as scholars and reflective practitioners.

A thread running through all courses of the MA program is that of Critical Pedagogy. As a stance towards teaching, learning and school systems, Critical Pedagogy recognizes the political nature of education and the systemic inequities (social, economic, gender, ethnocultural background, racial geography, etc.) that help create unequal educational opportunities for a variety of learners.

Program Requirements

Code	Title	Hours
Core Courses		
UEDU 5660	History of Schooling in the United States	3
UEDU 5240	Culture of Education Policy	3
UEDU 5070	Curriculum Theories in Urban Education	3
RSEM 5080	Research In Schools	3
Focus Area/Elective Courses		
Elective courses are grouped in the following areas. Select three courses from any of the following:		9
Pedagogy for 21st Century Learners		
Teaching for Cultural and Linguistic Diversity		
Math		
Alternative Licensure Core ¹		
EDFN 5010	Social Foundations and Cultural Diversity in Urban Education	3
UEDU 5040	Planning for Learning	3
UEDU 5934	Extended Internship & Learning Community	3-8
Total Hours		30-35

¹ Students who successfully complete the ASPIRE to Teach alternative licensure program qualify for the 9 credits in the Alternative Licensure Core. All other students are required to take an additional 9.0 elective/focus area credits.

Cumulative Portfolio

The MA portfolio counts as the comprehensive exam for the master's degree. The portfolio is an accumulation of the performance-based assessment completed during the courses and reflects on the student's development over the degree program.

Program Requirements and Courses

To complete the Curriculum & Instruction program and earn a master's degree, students must complete the appropriate course work as outlined in the table above. All courses require a grade of B- or better to count towards the MA and a minimum 3.0 GPA is required for graduation.

Doctoral Studies in Education

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Overview

Our EdD, PhD and PsyD programs strive to provide coursework, individual supervision and mentorship to produce scholars, researchers, leaders and innovators of the highest quality: research-savvy, methodologically sophisticated, and prepared for a lifetime of contributions to their field and profession. Explore the following exciting routes. Each leads to different potential career paths and supports different learning outcomes.

Programs

The school of Education & Human Development offers three doctoral programs:

- Education and Human Development, PhD (p. 431)
- Leadership for Educational Equity, EdD (p. 433)
- School Psychology, PsyD (p. 472)

Education and Human Development, PhD

Graduate School Rules (p. 59) apply to this program

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Introduction

The PhD in Education and Human Development links an intensive research-based course of study with a content area specialization to prepare candidates to assume faculty positions in institutions of higher education or research-based organizations. Successful applicants are paired with a faculty mentor who supports the student to engage in research, development, service, and other professional activities.

Overview of Course Work

Students complete a plan of study that includes at least 48 semester credits of coursework (including all required core courses) and 27 semester credits of dissertation. The PhD program provides each student with an induction into university research and teaching cultures. PhD coursework is intensive and substantive, requiring significant writing, analysis, and critique of theory and professional literature.

Doctoral students complete a series of courses and professional experiences in a specified concentration area. Concentration areas focus on a defined discipline or content area in preparation for professional roles as researchers and faculty members. Students also complete a research apprenticeship and higher education teaching practicum or equivalent experience.

Code	Title	Hours
Foundation Courses / Experiences - 12 Credits		
EDFN 7420	Foundations of Education in Urban and Diverse Communities	3
LDFS 7712	Learning and Human Development	3
EDFN 7400	Epistemologies: Ways Knowing, Res Paradigms, & Counter-Epistemologies	3
EDFN 7833	Culture and Critical Theory	3
Research Methods - 18 Credits		
RSEM 7000	Doctoral Seminar in Research Methods	3
RSEM 7110	Intermediate Statistics	3
RSEM 7080	Methods of Qualitative Inquiry	3
RSEM 7150	Mixed Methods Research	3
Electives (select two courses (6 credits) of advanced research methods)		6
Total Hours		30

Concentration Area - 18 credits

The PhD concentration include the following areas. Students will work with their faculty advisor to determine concentration area courses.

Leadership for Educational Organizations. Students and faculty in this concentration area focus on leadership in schools and the crucial assumption that school leadership makes a difference in how schools succeed in improving learning outcomes for all students. The scholarship and research on school leadership focuses on understanding why leadership is successful, what the interactions are between effective leadership and effective teaching, and how best to impact the collective impact of leadership on organizational and student-learning outcomes at all levels.

Inclusive Early Childhood Education. The goal of this concentration area is to introduce students to issues and practices in early childhood special education/early childhood education and prepare students who provide leadership to improve outcomes for all children including children with disabilities across early childhood settings. Students obtain the skills and knowledge of evidence-based practices needed to address state and national leadership needs within institutions of higher education to address issues in ECSE/ECE. Graduates conduct rigorous research related to culturally responsive, evidence-based practices; translate research into practice, thus expanding the use of evidence-based practice in the field; and, create, evaluate, and improve pre-service teacher education programs in ECE and ECSE.

Early Childhood Policy. The goal of this concentration is to prepare candidates to be leaders, policymakers, policy advisors and analysts, faculty members, and researchers who successfully shape, direct, implement, and evaluate early childhood services, infrastructure, and policy and contribute to the scholarly knowledge that undergirds the discipline. Graduates enter a growing and dynamic field with burgeoning research about the critical years in children's brain development, learning, and health. This concentration holds institutional and system reform as its unit of change and equity in opportunity and outcomes as the purpose for change.

Family Science and Human Development. The goal of this concentration is to prepare students to critically examine and understand family science within an ecological life span development lens. This program prepares students to work in academic careers as researchers and scholars in Family Science and Human Development. Students are provided a rich curriculum that centers on theoretical and scholarly knowledge in family science, human development and research inquiry. Another objective of this program is to integrate the importance of family diversity (which includes race, ethnicity, culture, class, gender, sexual orientation, age, religion, ability and language) into the curriculum as it relates to social justice in family science and child, adolescent and adult development. Central to the Family Science and Human Development concentration is the conceptual framework of family and human ecological systems and how that framework impacts research, practice and policy with diverse families in the United States and at the global level.

Math Education. Students and faculty in this concentration area focus on teacher learning and professional development experiences. Specifically, projects investigate the ways that particular interventions used in professional development for mathematics teachers impacts their content knowledge and pedagogical practices in their classrooms. Work in this area is framed by a situative perspective of learning and incorporates mixed methods to answer questions around the ways particular interventions support teacher and student learning. Video

data is prominent in both the design of professional development interventions as well as a major data source for analyses. Analytic methods vary based on the research question and grain size.

Research and Evaluation Methods. The goal of this concentration area is to prepare students to design and carry out significant applied research on individual and organizational change in the field of education and human development. Through problem-based pedagogy and hands-on learning, students will be prepared to be collaborative applied researchers who work with community, university, and school partners. Students will learn advanced quantitative, advanced qualitative, and mixed methods research techniques. Course content includes mixed methods, advanced statistics, advanced qualitative data analysis, systems analysis, collaborative team research, and practicum experiences. Graduates of the program are prepared to work as faculty members, school district and organizational researchers, data analysts, and assessment coordinators.

Science Education. The goal of this area is to prepare students to explore, understand, and think critically about the nature of science and science education from a research-oriented perspective. Students may elect to focus on environmental science education as an area of specialization within this concentration area through electives and discipline-specific research agendas.

Critical Studies in Education. This concentration area includes faculty who approach their research and teaching in education with a transdisciplinary and critical lens, especially with respects to race, gender, class, disability, sexuality, language, and culture. Faculty members ground their approach in social justice in education and promote the ideas of educational equity, transformative education, and educational activism in nontraditional ways. Particularly, how schooling, society, and policies are dialectical sites of oppression and liberation; and how the role of educator is that of intellectual activist to facilitate that liberation. Because an activist approach is necessary, this concentration area convenes a monthly research meeting where students and faculty collaboratively work on research, publications, conference presentations, and theory building. The faculty of Critical Studies in Education approach education in critical ways to ensure the futurity of a more transformational, liberatory, and humanizing educational system and society.

Dissertation - 27 Credits

Doctoral students complete a series of courses/experiences in a specified concentration area. Concentration areas focus on a defined discipline or content area in preparation for professional roles as researchers and faculty members. Students also complete a research apprenticeship and higher education teaching practicum or equivalent experience.

The following learning outcomes guide the PhD course and program development.

Graduates of the PhD in Education & Human Development program are able to do the following:

1. Apply theories of learning and development to understand fundamental questions involving education, communities, and/or families;
2. Identify and analyze an issue related to equity;
3. Apply a critical lens to interrogate existing research and theoretical perspectives;
4. Critically apply theories, methods, and knowledge to address questions in their primary field;

5. Demonstrate skills and knowledge at a level required for college and university teaching;
6. Plan and conduct research of significance; and
7. Demonstrate skills in oral and written communication sufficient to publish and present work in their field or prepare grant proposals.

Leadership for Educational Equity, EdD

Graduate School Rules (p. 59) apply to this program

Introduction

Students completing this program earn a Doctorate of Education (EdD) in the area of Leadership for Educational Equity.

The EdD program is a practice-based, doctoral-level program for professional leadership in PK-20 and community-based educational contexts. The EdD prepares leaders to address complex educational challenges, effectively translate research into practice, influence policy, use data in decision-making, and organize individuals and groups to address challenges collaboratively and successfully. The EdD program's equity focus equips educational leaders to recognize, identify, and eliminate those systems that create disparities; and improve policy, structures, and practices to ensure opportunities and participation for all individuals.

The EdD program uses a cohort model. Students in the EdD program select a concentration area and work with faculty mentors with expertise in the research and traditions of practice in the concentration area.

Students follow their cohort taking the prescribed coursework and research activities in a three-year plan of study. All students complete courses that are in-person, online, and hybrid with required attendance and activities. A five-year plan of study option is available for select students who obtain permission from the EdD program manager and concentration faculty.

Program Requirements

Code	Title	Hours
EdD Core Courses - 12 Credits		
EDFN 7410	Power and Privilege: The Social Construction of Difference	3
EDUC 7100	Leadership in Education	3
EDUC 7230	Organizational Performance In Educational Contexts	3
Select one of the following:		
LDFS 7712 or INTE 7100	Learning and Human Development Professional Learning and Technology	3
Research Core (three 3-credit courses)		9
Electives (two 3-credit courses)		6
Concentration Areas (four 3-credit hour courses) (p. 433)		12
Culminating Doctoral Research Project. These 15 hours include five 1-credit doctoral seminars and a minimum of ten credit hours during which candidates conduct and complete their doctoral research study.		15
Total Hours		54

Concentration Areas

Executive Leadership concentration is designed for professionals in leadership positions in educational, community, and non-profit organizations who wish to acquire learning and experiences related to personnel management, finance, accountability systems, evaluation, community relations, policy development, analysis, and research. This concentration supports learning activities for individuals who hold or seek to move into senior leadership positions within school districts, community colleges, education policy organizations, and community-based education organizations. Within this concentration are two options for professional licensure:

1. Administrative Leadership Program with option for Administrative Licensure from the Colorado Department of Education (CDE) or
2. Principal Licensure Program with option for Principal Licensure from CDE.

Early Childhood Special Education/Early Childhood Education

concentration is designed for educational professionals interested in issues and practices in early childhood special education and early childhood education to improve outcomes for children with disabilities across early childhood settings. The concentration supports educators and administrators in districts, agencies, and programs to effectively improve outcomes of all children, including children with disabilities.

Latinx Schools and Communities concentration focuses on leadership, organizational change and measurement, research and evidence-informed decision-making, and creating equity and excellence in schools, organizations, and communities. Students study restructuring for linguistic diversity, language education policy and politics, and research on issues affecting Latino/a students and their communities. Together with their faculty mentors, students review current research and apply their leadership skills to create real world solutions for change.

Mathematics Education concentration provides learning opportunities for education professionals focused on teacher learning and professional development experiences. Faculty and students investigate how interventions used in professional development for mathematics teachers impact their content knowledge and pedagogical practices in their classrooms. The coursework uses a situated perspective of learning and incorporates mixed methods to address research questions about interventions that support teacher and student learning.

Professional Learning and Technology (PLT) concentration supports education professionals in PK-12, higher education, and organizational settings who design and implement professional development and learning activities. Applying principles of adult learning, instructional design, and change leadership, the faculty and students in PLT use a variety of methods to support professional growth and accountability (e.g., mentoring, coaching, site-based communities, e-learning resources, and workshops). The PLT concentration courses prepare students in leadership roles in professional learning programs at all levels to apply research and best practices.

Science Education concentration prepares educators to explore, understand, and think critically about the nature of science and science education from a research-oriented perspective. Students may elect to focus on environmental science education as an area of specialization within this concentration through electives and discipline-specific research agendas.

Urban and Diverse Communities concentration is designed for practitioners in PK-12, higher education, and community-based settings.

Students develop a complex view of urban and diverse educational systems, opportunities, and challenges that are influenced by policies and practices in housing, healthcare, employment, urban development, and similar fields. Students develop the skills and dispositions to work alongside communities, while developing an understanding of the historical and cultural realities facing those communities.

EdD Program with Higher Education Concentration

Students completing this program earn a Doctorate of Education (EdD) in the area of Leadership for Educational Equity in the Higher Education Concentration Area. Within this concentration, all students complete 8-week online courses with required activities and off-campus, in-person one-week intensives with required attendance/activities. This is a three year program (there is not a five year option for the Higher Education Concentration).

Students in the EdD program in the Higher Education concentration work with faculty mentors with expertise in the research and traditions of practice in a variety of post-secondary and higher education settings. The Higher Education concentration also provides a unique executive coaching support service (for a maximum of 12 months post-graduation) that students may choose to receive after completion of the EdD program.

Topics of study in the Higher Education concentration include leadership skills to improve access, equity, and success for college and university students; power and privilege; law and ethics; organizational cultures; finance and strategic resource allocations; and predictive analytics.

Course Work - 54 Semester Credits

The EdD in Higher Education concentration 54 credits include the following course work and research activities:

Code	Title	Hours
	EdD in Higher Education Core Courses (three 3-credit courses)	9
	Research Methods Courses (three 3-credit courses)	9
	Higher Education Concentration Area (seven 3-credit courses)	21
	Culminating Doctoral Research Project. These 15 hours include five 1-credit doctoral seminars and a minimum of ten credit hours during which candidates conduct and complete their doctoral research study.	15
Total Hours		54

Early Childhood Education

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Overview

Early Childhood Education Program Pathways

The Early Childhood Education (ECE) department offers a variety of graduate degree, licensure and certificate pathways for students. Each pathway is grounded in a shared commitment to inclusion, equity and social justice from birth through grade three. Deep and reciprocal community-engaged partnerships support relevant learning across a

variety of contexts. Faculty bring seasoned experience with teaching practice, research design and community leadership that contributes to innovative and responsive courses where students thrive. Courses are available in a variety of formats to match your learning preferences and personal circumstances.

The ECE Program outcomes are:

- Early childhood professionals who demonstrate an understanding of the interdependent relationship between sociocultural and biological aspects of child growth and development, as well as individual developmental and learning differences between and among young children with and without disabilities.
- Early childhood professionals design and implement culturally, linguistically, developmentally appropriate curricula and create inclusive learning environments for young children. They implement a variety of evidence-based, culturally sustaining practices to individualize learning opportunities for children with diverse identities and sociocultural contexts.
- Early childhood professionals observe and document child development and learning of individual children within their families' sociocultural context. Early childhood professionals select relevant tools and processes, including formal and informal assessments of development, learning, environments, and programs.
- Early childhood professionals know, use, and advocate for ethical guidelines and professional standards related to interactions with young children, families and other professionals within early childhood contexts.
- Early childhood professionals examine and plan their leadership and advocacy toward equitable, diverse and inclusive early childhood environments. They critically analyze theories, policies, research and practices to promote all children's development, learning and well-being.
- Early childhood professionals appreciate and value the diverse assets of children's sociocultural contexts including families and communities. They demonstrate respectful, responsive, and reciprocal relationships that inspire belonging among children, families and professionals.

ECE Program graduate students may select from the following program options:

Master's Degrees in Early Childhood Education

- Early Childhood Education Personalized Professional MA. The Early Childhood Education (ECE) PPMA program leads to a master's degree in early childhood education. The program prepares teachers and leaders who will enrich the life experiences of young children (ages birth to 8 years) and their families through a variety of professional roles. The personalized design of the program of study for each graduate student allows for specialization across diverse areas of focus within a variety of early learning contexts and communities of practice.

Licensure as an Early Childhood Special Education Specialist:

- Early Childhood Special Education Specialist Endorsement (available with or without MA)
- Early Childhood Special Education Specialist Initial Licensure (available with or without MA)

The licensure programs focus on building and supporting learning and development of all children across inclusive settings in the natural

environments where they live, grow and learn. The program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Culminating practicum experiences are designed for students to apply knowledge and practice skills in a closely supervised environment. Upon successful completion of a licensure program, students may apply for either an added endorsement or initial license (depending on the program completed) from the Colorado Department of Education.

Early Childhood options through Continuing Education:

- Early Childhood Education Coaching Certificate (<https://education.ucdenver.edu/continuing-education/certificates/ece-coaching-certificate/>) provides experiential learning in best coaching practices for teacher-leaders, coaches, directors, principals, home childcare providers, early interventionists, special education staff or anyone looking to enhance their coaching skills.
- Buell Early Childhood Leadership Program (<https://education.ucdenver.edu/continuing-education/certificates/Buell-Early-Childhood-Certificate/>) prepares students to become leaders who will transform the landscape of early childhood education. The coursework focuses on leadership practices specific to child development, learning organizations, and community and systems change that advance equity, excellence, and opportunity among all young children and families. Generously funded by the Buell Foundation.
- Early Childhood Education MA through Boulder Journey School Partnership (<https://education.ucdenver.edu/academics/reggio-emilia/boulder-journey-school-ece-ma/>) offers the study of innovation for children birth to age 8, at Boulder Journey School, inspired by the schools for young children in Reggio Emilia, Italy. Study quality multi-media examples of learning and teaching, engage in collaborative examination of documentation, and develop interpretations and new practices to innovate the field of Early Childhood Education. This is a fully online program.

Fieldwork and Practicum Requirements

Prior experience with young children is required for enrollment in the MA program. Prospective applicants who do not have field experience can apply for and, if accepted, start the ECE program while working (or volunteering) in a setting with young children. Prior to acceptance in the ECSE licensure program, prospective applicants must provide evidence documenting at least one year of field experience with young children with delays or disabilities.

For the MA in ECE plus the ECSE specialist initial license, a total of 800 hours of fieldwork/practica is required. Approximately 300 hours of fieldwork are associated with course assignments and ongoing field work with culminating practicum experiences occurring toward the end of the second year of study.

Programs

ECE Program students may select from three program options:

- Early Childhood Education, MA (p. 439)
- Early Childhood Special Education Specialist Endorsement (p. 440)
- Early Childhood Special Education Specialist Licensure (p. 441)

Faculty

More information about faculty in this program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/early-childhood-education> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/early-childhood-education/>)

Early Childhood Education (ECED) Courses

ECED 5010 - Curriculum in Early Childhood Education (3 Credits)

Review of principles of early childhood curriculum and program development. Linkages are made between theoretical bases of development and curriculum planning. Curriculum areas considered include language and literacy, mathematics, motor, social-emotional, science, social studies and aesthetic development. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5040 - Administrative Seminar (3 Credits)

Emphasizes topics required of administrators to effectively lead and manage early childhood inclusive classrooms or other related programs including leadership capacity, professionalism, administration, teaming/collaboration, communities of practice, staff management, safety, and professional development. Cross-listed with ECED 4040. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5060 - Working with Families and Communities (3 Credits)

Theories, practices and research related to working with families and communities. Topics include: social systems perspective, family structures and forms; family support systems; family-centered practice; family/professional partnerships; effective communication; and working with parents of children with special needs. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5070 - Social Competence and Classroom Supports (3 Credits)

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 7070. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5080 - Language and Literacy in Young Children (3 Credits)

Overview of theories and research in early language and literacy development. Emphasis on sociocultural beliefs and practices associated with the use of language and literacy in the different contexts. Information about language disorders found in early childhood settings is discussed. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5091 - Educators as Social Change Agents (3 Credits)

Focus on developing knowledge, skills and dispositions to advance equity and social justice in classrooms, programs, and communities to activate educators as social change agents and implement quality inclusive practices for young children from diverse backgrounds. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5102 - Introduction to Developmentally Appropriate Curriculum (1-3 Credits)

Introduces developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Subject areas considered include literacy, language arts; mathematics, computers, blocks; science, outdoor education; social studies, thematic units; and art, drama, music, physical activity. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ECED 5104 - Advanced Developmentally Appropriate Curriculum (1-3 Credits)

Extends earlier learning about developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Students elaborate their knowledge of subject area materials and activities. A curriculum unit that is developmentally appropriate is planned, implemented and evaluated. Repeatable. Max Hours: 4 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 4.

ECED 5110 - Advanced Infant and Toddler Development: (3 Credits)

Focuses on development of infants/toddlers to inform responsive caregiving practices. Develop observation skills to understand infant/toddler behavior. A relationship-based approach to curriculum is emphasized. State requirements for licensed infant/toddler programs, accreditation and quality standards are discussed. Max hours: 3 Credits. Grading Basis: Letter Grade

ECED 5200 - Screening and Assessment of Young Children (3 Credits)

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 7500. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ECED 5202 - Classroom Management to Promote Positive Behavior (3 Credits)

Evidence-based classroom management strategies to promote social competence and reduce behavior problems. Includes strategies for responding to challenging behavior and developing individualized behavior support plans. Explores factors that influence the lives of young children including family disruption, stress, violence and trauma. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ECED 5210 - Overview of Infant Toddler Autism Services (3 Credits)

This course will provide students with a general introduction to the legal and procedural elements that characterize state-of-the-art services to infants and toddlers with ASD. The course will review the Federal mandate for services, principles of practice, and evidence-based teaching strategies for children with autism. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits. Grading Basis: Letter Grade

ECED 5211 - Applied Treatment Delivery for Infants and Toddlers with ASD (3 Credits)

The course explores current treatment methods and philosophies for young children with Autism Spectrum Disorder (ASD). Common intervention approaches are reviewed, with discussion of the evidence base of each. Intervention goals covered address language, play/socialization, early adaptive skills, and positive behavior. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5212 - Coaching for Families Infants/Toddlers w/ Autism (3 Credits)

This course provides the knowledge and skills necessary to implement recommended, evidence-based practices with families of infants and toddlers with or at risk for ASD. The course will review current evidence based strategies for supporting families, collaborating with families, and using evidence-based family coaching strategies. Must be accepted into the Infant Toddler Autism Certificate Program Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5301 - Child Development: Theory to Leadership Practices (3 Credits)

This course will provide an introduction to theories of child development from an interdisciplinary perspective. It examines development in the cognitive and socioemotional domains utilizing biological, social, psychological and anthropological perspectives and how theory is used to shape program models. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5311 - Equity for Leadership in Early Childhood Programs (3 Credits)

This course is designed to provide early childhood leaders with an understanding of the equity issues present in early childhood systems and how these issues are reflected in individual identities and programs. Theories from the academic community will be used to facilitate student growth in understanding how these issues interact with them at a personal, professional and leadership level. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5312 - Leading Learning Organizations (3 Credits)

This course will deepen student's capacity to lead effectively and learn how to create an adaptive, flexible learning organization well positioned for delivering effective and sustainable programs and services on behalf of young children and families. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5320 - Community-Based Action Research: Capstone (3 Credits)

This course is designed to foster the leader's appreciation, skills, and practice as a participatory action researcher. Students will learn these concepts by leading a participatory action-research project in their community around a challenging early childhood issue and will present their action research project culminating at a Capstone Celebration. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5330 - Introduction to Transformational Leadership (3 Credits)

This course outlines the evolution of leadership theory over the past half-century and immerses students in an exploration of the values, leadership capacities, and practices that define transformational leadership as they apply to effecting change to support the success and well-being of young children and their families and communities. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5340 - Strategic Leadership & Current Issues in Early Child (2 Credits)

This course addresses current issues in research, theory, policy development, and administrative leadership of programs for all young children. Strategic Leadership anchors all decisions to a shared vision through the systematic evaluation and strategic planning for program or organization growth and service. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 2 Credits.

Grading Basis: Letter Grade

ECED 5350 - Policy and Advocacy in Early Childhood (3 Credits)

This course provides the historical and political context of early care and education in the United States. Local, state and federal mandates, public laws, and legislative procedures and initiatives will be investigated. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5410 - Coaching for Early Childhood Professionals: Foundations (3 Credits)

The Foundations course focuses on learning, understanding and using relationship and evidence-based coaching skills in early childhood settings. Students will practice the fundamentals of coaching using a systematic, individualized, reflective approach and sharing experiences with others in the course. Cross-listed with ECED 4410. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5420 - Coaching Early Childhood Professionals: Awareness (3 Credits)

The Awareness course focuses on increasing coaches' skills at introspection, thoughtful planning, intentional application of coaching knowledge and skills, and continuous improvement. Students will integrate skills with effective application in class and real life coaching experiences, managing progress and accountability. Cross-listed with ECED 4420. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5430 - Coaching for Early Childhood Professionals: Attuning (3 Credits)

The Attuning course will integrate skills from the Foundations and Awareness courses to complete the EC Coaching Certificate. Students practice refining and altering coaching based on needs and readiness. Students learn sustainable organizational change that embed coaching in all professional practice. Cross-listed with ECED 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5650 - Dual Language Learners Learning and Development (3 Credits)

The course will review current research on the learning and development of young dual language learners (birth through 8) and the classroom environments and instruction that can promote their learning. The course uses a socio-cultural framework to view children's learning. Cross-listed with ECED 4650. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5800 - Workshop: Topics in Early Childhood Education (1-4 Credits)

Topics and credit hours vary from semester to semester. Cross-listed with ECED 4800. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

ECED 5840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECED 5850 - Capstone in Early Childhood Education (3 Credits)

Capstone is a final project that demonstrates your academic and professional development. It explains professionally who you are, where you have been, how you have developed in ECE. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5933 - Internship III & Collaborative Learning Community (2-8 Credits)

ECED 5933 is the final internship in a series of three completed during the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice to be licensed as an early childhood educator. Cross-listed with ECED 4933. Repeatable. Max Hours: 8 credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

ECED 6010 - Literacy and Mathematics K-2 (3 Credits)

Principles of early reading and mathematical development for grades K-2 including diverse instructional strategies and differentiation for children with disabilities. Linkages are made between child development and learning expectations for mathematics, reading and writing and curriculum planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

ECED 6100 - Medical and Physiological Aspects of Development (3 Credits)

Presents medical and physiological aspects of development including an understanding of chronic illness/medical fragility in young children and the effects on families, school, and community. Examination and professional responses to cultural interpretation of medical issues are discussed. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6200 - Early Intervention Strategies (3 Credits)

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 7200. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6300 - Contextual Curriculum I (3 Credits)

This course focuses on the role of the teacher in developing a contextual curriculum that deeply engages learners. Developing curriculum includes observing learners, documenting observations using technology, and reflecting on documentation with colleagues to intentionally implement curriculum plans. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6310 - Contextual Curriculum II (3 Credits)

This course builds upon competencies developed in ECED 6300: Contextual Curriculum I through curriculum development that relies on the cyclical process of critical observation, documentation, analysis, reflection, and provocation. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6320 - A Colorado Interpretation of Reggio Emilia Approach (3 Credits)

This course focuses on the Reggio Approach to Early Childhood Education and its interpretation in a Colorado context, Boulder Journey School. Students will experience three modules, each with cycles of inquiry, construction of understandings, application into their own context and mediation by course instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6330 - Supportive Social Learning (3 Credits)

This course will provide students with the strategies that promote social competence and reduce the potential for interactions and behaviors that often challenge teachers. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6340 - Messing About with STEM (3 Credits)

This course focuses on the role of the teacher in supporting STEM experiences in diverse contexts. Students will draw from relevant research and philosophy of science, combined with inquiry-based experiences guided by established frameworks, to strengthen their STEM mindset. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6350 - Literacy and the Hundred Languages (3 Credits)

In-depth study of scientific and theoretical foundations of communication and literacy development, the conceptual paradigm of 100 languages of children, the nature of languages, and acquisition patterns in contexts of individual variation, cultural and linguistic differences, or language challenges. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6360 - Children and Teachers as Change Agents (3 Credits)

This course focuses on partnering with children and other educators around a community-based action project that will contribute to the community. Students will review literature and documentation, collaborate, design, lead, and advocate around a topic that relates to young children. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6690 - Seminar: Research and Current Issues in Early Childhood Education (3 Credits)

Research methods are reviewed and then selected topics are considered. Emphasis is on research findings and current issues of importance to teachers, administrators, specialists, collaborator/consultants, and researchers in early childhood and early childhood special education. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6910 - Early Childhood Special Education Infancy Practicum (1-4 Credits)

Supervised field-based experiences in settings for children with disabilities and at-risk infants, toddlers, and their families. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 6911 - Initial Practicum and Field Experience in Early Childhood Education (1-4 Credits)

In this experience, you will be introduced to an array of skills/practices that support working effectively with young children and families in the context of their local community. You will work within the community to support children's academic/social development. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

ECED 6912 - Early Childhood Special Education Preschool Practicum (1-4 Credits)

Supervised field-based experiences in settings for young children with disabilities and their families, including school districts and community agencies. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200.

Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 6914 - Early Childhood Special Education Primary Practicum (1-4 Credits)

Supervised field-based experiences in kindergarten through second grade settings with typically developing children, children with special needs and special education teams. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 7000 - ECE Today: Examining Practices, Policies, & Key Issues (3 Credits)

This course provides in-depth understanding of the issues that shape contemporary early care and education in the U.S. The course addresses historical and contextual variables, providing a thorough overview of the pedagogy, practices, and policies framing the design and delivery of ECE. Cross-listed with EDUC 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7002 - Early Childhood Leadership Seminar II (3 Credits)

The purpose of the course is to provide scholars with leadership knowledge and skills to implement policies, laws, programs, and systems that support the use of evidence-based practices with young children with disabilities. Prereq: ECED 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECED 7000 Restriction: Restricted to EDHD-PhD, LDRE-EDd and EDLI-PhD majors within the School of Education and Human Development.

ECED 7004 - Early Childhood Leadership Seminar III (3 Credits)

The purpose of this seminar is to provide the knowledge and skills to implement evidence-based practices in early childhood settings. This seminar will focus on policies and practices that support implementation, scale-up, and sustainability of evidence based practices in early childhood systems. Prereq: ECED 7002. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: ECEC 7002 Restriction: Restricted to EDHD-PhD, LDRE-EDd and EDLI-PhD majors within the School of Education and Human Development.

ECED 7010 - History, Child Development, and Equity: Early Childhood (3 Credits)

This course critically considers the developmental science that informs policy and program development; the social, political and economic forces that shape the study of young children and contribute to trajectories that benefit some children while disadvantaging others; the changing roles of families; and implications of these issues for policy. Cross-listed with EDUC 7010. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 7011 - Proseminar I in Child, Youth, and Family Studies (1 Credit)

This course aims to introduce students in the Child, Youth, and Family Studies PhD pathway to doctoral studies and to faculty research. The course is also designed to support students in situating themselves in the discipline, enhancing their scholarly identity, and refining academic writing and presentation skills. Cross-listed with EDUC 7011 and HDFS 7010. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

ECED 7020 - ProSeminar II in Child, Youth, and Family Studies (1 Credit)

This course is for 2nd year students in the Child, Youth, and Family Studies PhD pathway. The course is designed to support students in developing a research agenda, exploring ethics in research, enhancing scholarly identity, and preparing for comprehensive examinations. Prereq: HDFS 7010 or ECED 7011 or EDUC 7011. Cross-listed with HDFS 7020 and EDUC 7020. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011.

ECED 7030 - ProSeminar III in Child, Youth, and Family Studies (1 Credit)

This course aims to provide third year doctoral students in the Child, Youth, and Family Studies PhD pathway with an immersive writing opportunity and professional development experience to help prepare for comprehensive examinations, the dissertation, and post graduate school life. Prereq: ProSem I and ProSem II (HDFS 7010 or ECED 7011 or EDUC 7011 & HDFS 7020 or EDUC 7020 or ECED 7020). Cross-listed with EDUC 7030 and HDFS 7030. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011 AND HDFS 7020 or ECED 7020 or EDUC 7020.

ECED 7070 - Social Competence and Classroom Supports (3 Credits)

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 5070.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 7200 - Early Intervention Strategies (3 Credits)

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 6200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7500 - Screening and Assessment of Young Children (3 Credits)

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 5200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7830 - Special Topics in Early Childhood Education (1-3 Credits)

Study of special topics that examine community and educational settings in Early Childhood Education to be selected by the instructor. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Early Childhood Education, MA

Introduction

The Early Childhood Education (ECE) program leads to a master's degree in early childhood education and/or Colorado teacher license/endorsement in early childhood special education (ECSE) specialist. The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The program draws on university resources and the clinical expertise of various professionals and early childhood partners in the community. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Fieldwork experiences are designed for students to apply knowledge and practice skills in a closely supervised learning environment.

The MA in ECE includes course content in:

- language and literacy development,
- child growth and development,
- teaching and learning approaches with young children,
- learning, development and education grounded in culture, context and identity of young children,
- research methods for education,
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms collaborative program development and supports for children with families and communities,

- leadership of programs and early childhood professionals for practice, advocacy and social change

Program Requirements

This program allows candidates to work closely with faculty advisors in specific course selection that is most relevant for them and their desired professional path, including courses outside the ECE program area.

Course experiences and learning are facilitated to support the growth of each candidate toward professional competencies and outcomes for graduates of the program.

Code	Title	Hours
Required Courses		12
ECED 5060	Working with Families and Communities	
ECED 5010	Curriculum in Early Childhood Education	
RSEM 5080	Research In Schools	
ECED 5850	Capstone in Early Childhood Education	
Choose 6 of the following courses:		18
ECED 6100	Medical and Physiological Aspects of Development	
ECED 5040	Administrative Seminar	
ECED 5110	Advanced Infant and Toddler Development:	
ECED 5200	Screening and Assessment of Young Children	
ECED 5080	Language and Literacy in Young Children	
ECED 6200	Early Intervention Strategies	
ECED 5070	Social Competence and Classroom Supports	
ECED 5650	Dual Language Learners Learning and Development	
ECED 6010	Literacy and Mathematics K-2	
ECED 5311	Equity for Leadership in Early Childhood Programs	
ECED 5091	Educators as Social Change Agents	
In consultation with your faculty advisor, students may also take up to 5 courses from the Thematic Course Categories https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Total Hours		30

Capstone Requirement

The Early Childhood Education Capstone fulfills the COMPS requirement for MA students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the ECE Program. The capstone should tell the story of what was learned, specific areas of interest, address ongoing barriers experienced in the field, and future professional plans. All ECE MA completers must do a Capstone project, and register for the 3 credit Capstone class.

Program Requirements and Courses

To complete the Early Childhood Education program and earn a master's degree and/or license/endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Early Childhood Special Education Specialist Endorsement

Introduction

The early childhood special education (ECSE) program leads to an added endorsement in ECSE specialist. If you do not hold a current teaching license, information about ECSE licensure is available here (p. 441). The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) with delays and disabilities and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The ECSE program is interdisciplinary in focus, drawing on university resources and the clinical expertise of various community professionals and partners. There is a strong emphasis on fieldwork and practicum experiences. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Practicum experiences are designed for students to apply knowledge and practice skills in a closely supervised environment.

The early childhood special education licensure program provides specialized preparation in:

- language and literacy development
- child growth and development
- teaching and learning approaches with young children
- learning, development and education grounded in culture, context and identity of young children
- research methods for education
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms,
- collaborative program development and supports for children with families and communities

- leadership of programs and early childhood professional for practice, advocacy, and social change
- screening and assessment of young children
- individualized and systematic supports for children diagnosed with disabilities
- classroom supports and instructional strategies to promote social emotional competence
- working as a collaborative member of a transdisciplinary team
- high and low incidence disabilities
- education supports for children identified with disabilities or chronic illness

Program Requirements

Classes are listed in recommended order. Prerequisites: Please note that a recent Child Development course as well as an Initial Practicum are prerequisites, determined on an individual basis at admissions.

Code	Title	Hours
ECED 5010	Curriculum in Early Childhood Education	3
ECED 6100	Medical and Physiological Aspects of Development	3
ECED 5200	Screening and Assessment of Young Children	3
ECED 5080	Language and Literacy in Young Children	3
ECED 6200	Early Intervention Strategies	3
ECED 5070	Social Competence and Classroom Supports	3
Practicum Courses ¹		6
Total credit hours are divided between three practicum levels		
ECED 6910	Early Childhood Special Education Infancy Practicum	
ECED 6912	Early Childhood Special Education Preschool Practicum	
ECED 6914	Early Childhood Special Education Primary Practicum	
Total Hours		24

¹ Students must complete ECED 5010, 5070, 5080, 5200, 6100, and 6200 prior to enrolling in any practicum course, or have faculty permission to take their first practicum course concurrent to their final prerequisite course.

Requirements to add a MA ECSE Endorsement (requirements above) plus MA

Code	Title	Hours
ECED 5060	Working with Families and Communities	3
ECED 5040	Administrative Seminar	3
RSEM 5080	Research In Schools	3
ECED 5850	Capstone in Early Childhood Education	3
ECSE Endorsement plus MA - 36 credit hours		
Total Hours		12

Fieldwork and Practicum Requirements

For the ECSE specialist added endorsement, a total of 800 hours of fieldwork/practica is typically required. Approximately 300 hours of fieldwork are associated with course assignments; 500 hours of intense, culminating practica occur toward the end of the second year of study.

Depending on previous experience, up to one credit of practicum may be waived in the added endorsement program.

Program Requirements and Courses

To complete the Early Childhood Education program and earn a master's degree and/or endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Early Childhood Special Education Specialist Licensure Introduction

The early childhood special education (ECSE) program leads to a Colorado teacher license in ECSE specialist. If you hold a current CO teaching license, information on adding an endorsement is available here (p. 440). The program prepares leaders who will enrich the life experience of young children (ages birth to 8 years) with special needs and their families through a variety of professional roles.

The ECE program focuses on building and supporting learning and development of all children across inclusive settings in the natural environments where they live, grow and learn. Our program emphasizes family-centered practices, culturally sustaining teaching and is inspired by the potential of all children and families. The ECSE program is interdisciplinary in focus, drawing on university resources and the clinical expertise of various community professionals. There is a strong emphasis on fieldwork and practicum experiences in both regular and special education concentrations. Field experiences are a part of each course and provide an opportunity for each student to gain knowledge, abilities and dispositions while interacting with children, families, program staff and community agencies. Practicum experiences are designed to allow students to apply knowledge and practice skills in a closely supervised environment.

The early childhood special education licensure program provides specialized preparation in:

- language and literacy development
- child growth and development
- teaching and learning approaches with young children
- learning, development and education grounded in culture, context and identity of young children
- research methods for education
- early childhood curriculum and program development for culturally and linguistically diverse inclusive classrooms
- collaborative program development and supports for children with families and communities
- leadership of programs and early childhood professional for practice, advocacy, and social change
- screening and assessment of young children
- individualized and systematic supports for children diagnosed with disabilities
- classroom supports and instructional strategies to promote social emotional competence
- working as a collaborative member of a transdisciplinary team
- high and low incidence disabilities
- education supports for children identified with disabilities or chronic illness

Program Requirements

Classes are listed in recommended order. Prerequisites: Please note that a recent Child Development course as well as an Initial Practicum are prerequisites, determined on an individual basis at admissions.

Code	Title	Hours
ECED 5060	Working with Families and Communities	3
ECED 5010	Curriculum in Early Childhood Education ¹	3
ECED 6100	Medical and Physiological Aspects of Development ¹	3
ECED 5040	Administrative Seminar	3
ECED 5200	Screening and Assessment of Young Children ¹	3
ECED 5080	Language and Literacy in Young Children ¹	3
ECED 6200	Early Intervention Strategies ¹	3
ECED 5070	Social Competence and Classroom Supports ¹	3
ECED 5650	Dual Language Learners Learning and Development	3
ECED 6010	Literacy and Mathematics K-2	3
Practicum Courses		6
Total credit hours are divided between three practicum levels		
ECED 6910	Early Childhood Special Education Infancy Practicum	
ECED 6912	Early Childhood Special Education Preschool Practicum	
ECED 6914	Early Childhood Special Education Primary Practicum	
Total Hours		36

¹ Students must complete ECED 5010, 5070, 5080, 5200, 6100, and 6200 prior to enrolling in any practicum course, or have faculty permission to take their first practicum course concurrent to their final prerequisite course.

Requirements to add a MA

ECSE Specialist License (requirements above) plus MA

Code	Title	Hours
RSEM 5080	Research In Schools	3
ECED 5850	Capstone in Early Childhood Education	3
ECSE Specialist License plus MA - 42 credit hours		
Total Hours		6

Fieldwork and Practicum Requirements

Prior experience with young children is required for enrollment in the program. Prospective applicants who do not have field experience can apply for and, if accepted, start the program while working (or volunteering) in a setting with young children. If students are not concurrently working in an ECE setting, they are required to enroll in ECED 6911 Initial Practicum and Field Experience in Early Childhood Education, and will be supported in finding a placement. It is recommended that students do so within their first two semesters. Since course assignments in all program options include requirements of observing and/or working with young children and their families, students must consider this in advance and plan for field-based opportunities.

For the ECSE specialist initial license, a total of 800 hours of fieldwork/practica is required. Approximately 300 hours of fieldwork are associated with course assignments; 500 hours of intense, culminating practica occur toward the end of the second year of study.

Program Requirements and Courses

To complete the Early Childhood Education program and earn a master's degree and/or license, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, all hybrid and remote courses are offered in the late afternoon and evening for up to 3 hours per week over a 16-week semester. In the summer semester, eight-week sessions are offered. Courses are offered in various formats, including hybrid, remote, or asynchronous online classes.

Planning

For practicing full-time teachers, we recommend taking two courses each fall and spring semester, and up to two courses each summer. If you prefer a less intensive course load, we recommend one course each fall and spring semester. Please review with your faculty advisor your preferred plan.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Leadership for Educational Organizations

Office: 1380 Lawrence Street Center, 701

Telephone: 303-315-6300

Email: academicservices@ucdenver.edu

Website: <https://education.ucdenver.edu/academics/graduate/leadership-for-educational-organizations> (<https://education.ucdenver.edu/academics/graduate/leadership-for-educational-organizations/>)

Overview

The Leadership for Educational Organizations (LEO) program is designed to develop outstanding educational leaders. Students will develop in-depth understanding about leadership roles and responsibilities, contemporary educational issues and collaboration, as well as a thorough awareness of legal, financial and political dimensions impacting education.

The LEO program seeks students who possess:

- High intellectual ability
- Strong sense of equity and social justice
- Strong academic backgrounds, and
- Clear leadership potential.

The primary responsibility of the leadership for educational organizations (LEO) faculty is to prepare future ready leaders to make an impact for public education in Colorado and the nation. Currently, the principal license is required for people seeking building-level administrative positions in Colorado. Alternatively, the administrator license may be required for district-level leadership positions in Colorado.

Programs

Click on any of the following to go to that information:

- Leadership for Educational Organizations with Principal Licensure, EdS (p. 446)
- Leadership for Educational Organizations - Principal Licensure, MA (p. 446)
- Administrator License - Executive Leadership Program (p. 446)
- Principal Licensure (p. 447)

Faculty

For information about faculty in this area, visit: <https://education.ucdenver.edu/about-us/faculty-directory/leadership-for-educational-organizations/1> (<https://education.ucdenver.edu/about-us/faculty-directory/leadership-for-educational-organizations/1/>)

Education (EDUC) Courses

EDUC 5000 - Special Topics: Administrative Leadership and Policy Studies (0.5-10 Credits)

Specific topics vary. Focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 40.

EDUC 5001 - Special Topics: Administrative Leadership and Policy Studies (1-10 Credits)

Repeatable. Max Hours: 40 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 40.

EDUC 5010 - Paraeducator Supervision Academy (1 Credit)

Provides the paraeducator with knowledge and skills to work effectively in teams. Paraeducators refine their knowledge of the characteristics of paraprofessionals in education, the distinction between professional and paraprofessional roles and responsibilities, liability and ethical issues.

Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5015 - Developmental Intervention Supervisor Academy (DISA) (1 Credit)

Developmental Intervention Supervisor Academy provides early intervention professionals with the knowledge and skills to work effectively in teams and to utilize and supervise Developmental Intervention Assistants (DI Assistant is the title used in Colorado for paraprofessionals in early intervention services). Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5020 - Trainers of Paraeducator Academy (1 Credit)

Provides the professional educator with the skills to provide effective presentations to paraprofessionals in schools. Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5025 - Developmental Intervention Trainers Academy (DITA) (1 Credit)

Developmental Intervention Trainer Academy (DITA) is offered to early interventional professionals who have completed EDUC 5015 (DISA). DITA provides the participants skills to become effective trainers who deliver training to Developmental Intervention Assistants (i.e. paraprofessionals in early intervention services in Colorado). Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5030 - Top Cadre of Trainers (TOPCAT) Seminar (3 Credits)

Provides CO-TOP Trainers (school professionals who have been through the PSA: EDUC 5010 and TOPA: EDUC 5020) ongoing support in their roles as supervisors and trainers of paraeducators. Through this seminar trainers receive updated information about CO-TOP Academies, find collegial support from other trainers, exchange ideas, gain presenting and adult teaching ideas, and receive feedback on their teaching of paraeducator academies. This seminar also addresses the questions and needs of the individual CO-TOP trainer with regard to CO-TOP paraeducator training materials and processes. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5040 - Mentoring Novice and Pre-Service Teachers (1 Credit)

Designed to help participants develop or enhance the skills necessary to successfully work with candidates who are completing teacher education programs. Concentrates on supervision and conference skills, adult learning theory, and communication skills. Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5651 - Foundations of Leadership (3 Credits)

This courses focuses on leadership and the characteristics and foundational elements of what the leaders need to think about and do while providing the opportunity for students to apply this foundational learning to leadership in their own organization. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5652 - Leadership for Equity/Social Justice (3 Credits)

Understand our own experiences and experiences of historically marginalized groups, with the historical and philosophical forces that have led to inequities, critically analyze current conditions and to work to develop school policies, curriculum and relationships to create access and opportunities. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5653 - Leadership Practices for Responsive Change (3 Credits)
This course focuses on leadership and the change process of individual and organizational responsive change with opportunity for students to learn about/apply this learning to the process of leading responsive change in the context of an organization. Max hours: 3 Credits.
Grading Basis: Letter Grade

EDUC 5654 - Leadership Practice Capstone (3 Credits)
The Capstone Experience is a culminating project that provides a way for students to demonstrate the knowledge and skills they acquired during the MA program, linked to issues of equity or social interest related to the United States educational system. Prereqs: EDUC 5651, EDUC 5652, and EDUC 5653. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereqs: EDUC 5651, EDUC 5652, and EDUC 5653.

EDUC 5655 - Leadership Practices for Transformative School Reform (3 Credits)
This course will create a community of learners who can work together to investigate constructs and principles for school turnaround and transformation. The course will draw on previous learning for the practical application of intentional leadership practices for school reform and transformation. Change theory will be considered and applied to reform and transformation. Students will have the opportunity to study current reform efforts. Max hours: 3 Credits.
Grading Basis: Letter Grade

EDUC 5751 - Principal/Administrator Licensing I (3-9 Credits)
This program section (1 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5752 - Principal Administrator Licensing II (3-9 Credits)
This program section (2 of 4) combines continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5753 - Principal/Administrator Licensing III (3-9 Credits)
This program section (3 of 4) combines Continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5754 - Principal or Administrator Licensing IV (3-9 Credits)
This program section (4 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5836 - Workshop: Educational Administration, Curriculum and Supervision (1-4 Credits)
Repeatable. Max Hours: 15 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 15.

EDUC 5840 - Independent Study: EDUC (1-4 Credits)
Master's. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

EDUC 5950 - Master's Thesis (1-8 Credits)
Repeatable. Max hours: 16 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 16.
Additional Information: Report as Full Time.

EDUC 6000 - Special Topics: Administrative Leadership and Policy Studies (1-10 Credits)
Specific topics vary; focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 40.

EDUC 6840 - Independent Study (1-4 Credits)
Max hours: 4 Credits.
Grading Basis: Letter Grade

EDUC 6951 - Master's Thesis (4 Credits)
Repeatable. Max hours: 16 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 16.
Additional Information: Report as Full Time.

EDUC 7000 - ECE Today: Examining Practices, Policies, & Key Issues (3 Credits)
This course provides in-depth understanding of the issues that shape contemporary early care and education in the U.S. The course addresses historical and contextual variables, providing a thorough overview of the pedagogy, practices, and policies framing the design and delivery of ECE. Cross-listed with ECED 7000. Max hours: 3 Credits.
Grading Basis: Letter Grade

EDUC 7010 - History, Child Development, and Equity: Early Childhood (3 Credits)
This course critically considers the developmental science that informs policy and program development; the social, political and economic forces that shape the study of young children and contribute to trajectories that benefit some children while disadvantaging others; the changing roles of families; and implications of these issues for policy. Cross-listed with ECED 7010. Max hours: 3 Credits.
Grading Basis: Letter Grade

EDUC 7011 - Proseminar I in Child, Youth, and Family Studies (1 Credit)

This course aims to introduce students in the Child, Youth, and Family Studies PhD pathway to doctoral studies and to faculty research. The course is also designed to support students in situating themselves in the discipline, enhancing their scholarly identity, and refining academic writing and presentation skills. Cross-listed with ECED 7011 and HDFR 7010. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

EDUC 7020 - ProSeminar II in Child, Youth, and Family Studies (1 Credit)

This course is for 2nd year students in the Child, Youth, and Family Studies PhD pathway. The course is designed to support students in developing a research agenda, exploring ethics in research, enhancing scholarly identity, and preparing for comprehensive examinations. Prereq: HDFR 7010 or ECED 7011 or EDUC 7011. Cross-listed with HDFR 7020 and ECED 7020. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFR 7010 or ECED 7011 or EDUC 7011.

EDUC 7030 - ProSeminar III in Child, Youth, and Family Studies (1 Credit)

This course aims to provide third year doctoral students in the Child, Youth, and Family Studies PhD pathway with an immersive writing opportunity and professional development experience to help prepare for comprehensive examinations, the dissertation, and post graduate school life. Prereq: ProSem I and ProSem II (HDFR 7010 or ECED 7011 or EDUC 7011 & HDFR 7020 or EDUC 7020 or ECED 7020). Cross-listed with ECED 7030 and HDFR 7030. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFR 7010 or ECED 7011 or EDUC 7011 AND HDFR 7020 or ECED 7020 or EDUC 7020.

EDUC 7100 - Leadership in Education (3 Credits)

Orients students to broad periods of administrative science, philosophical and behavioral underpinnings of various models and types of leadership, and develops doctoral-level analysis and writing skills to articulate self-knowledge as leader and the application of appropriate leadership practices in context. Prereq: admission to the doctoral program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EdD, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDUC 7230 - Organizational Performance In Educational Contexts (3 Credits)

Explores connections between organizational behaviors and outcomes as well as external and internal factors influencing organizational behavior.

The course focuses on how education organizations learn, how they can use that learning to improve performance, and what techniques are available to help understand present performance and affect future performance. Prereq: permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EdD, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDUC 7500 - Strategic Human Capital Development (3 Credits)

This course focuses on understanding and leveraging the personnel function of an educational organization. You will learn how to strategically align and maximize your human capital with organizational strategic objectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7510 - Strategic Organizational Management (3 Credits)

An effective partnership between the board, community and institutional leader is essential to fulfilling the mission of an educational organization. This course examines the importance of strategic visioning, strategic planning, and specific communication strategies. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7520 - Strategic System Improvement (3 Credits)

The fundamental purpose of educational organizations (schools, districts, community colleges, higher education, non-profits) is to ensure high levels of learning for all. This course addresses topics such as data development and management, accountability, curriculum assessment and instruction, continuous improvement, and professional learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7530 - Strategic Leadership Development (3 Credits)

Successful leaders are able to articulate, protect and promote what is important. This course will examine the challenges of educational leadership and help participants clarify the core values essential to their success as a leader. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7600 - Higher Education Policy and Governance (3 Credits)

In this course, students are challenged to explore the governance and policy environment of Higher Education, to understand the multiple layers of governance and the complex web of policy-making, to analyze the differences among systems of governance, and to evaluate the essential components and consequences of policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7610 - Strategic Enrollment Management in Higher Education (3 Credits)

Course is designed to deepen the understanding of the complexities of strategic enrollment management as research and practice, delving into the breadth of its critical issues and rapidly developing context, including the student lifecycle; the focus on equity and inclusion; emerging models for student success; and financial implications. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7620 - Contemporary Issues in Higher Education (3 Credits)

This course is a study of the critical, contemporary issues in higher education and the impact on institutions' goals for equity and student success. Students in the course will reach beyond the current context, understanding the origins of critical questions, and the impact of these issues on leadership decision-making. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

EDUC 7640 - Higher Education Finance and Strategic Resource Allocation (3 Credits)

This course is designed to introduce students to the complexity of higher education funding, the vast variations across systems, and the critical role of data informed decision making in strategic resource allocation its impact on student access and success. Students will enhance their own capacity to contextual decisions and consider parameters. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7650 - Data-Informed Decision-Making and Predictives in HED (3 Credits)

Course is designed to elevate the understanding of data-informed decision making and predictives as it relates to research & practice; defining leaders responsibility in creating a datadriven and ethically responsible culture using a lens of equity and inclusion. Max Hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7751 - Principal Licensure EDD Concentration Course I (3 Credits)
Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7751 will join a cohort of students in a hybrid cross-listed EDUC 5751, complete all work/assignments for PBA 1 and related PBA 5 assessments. Max hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.

EDUC 7752 - Principal Licensure EDD Concentration Course II (3 Credits)
Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7752 will join a cohort of students in a hybrid cross-listed EDUC 5752, complete all work/assignments for PBA 2 and related PBA 5 assessments. Max hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.

EDUC 7753 - Principal Licensure EDD Concentration Course III (3 Credits)
Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7753 will join a cohort of students in a hybrid cross-listed EDUC 5753, complete all work/assignments for PBA 3 and related PBA 5 assessments. Max hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.

EDUC 7754 - Principal Licensure EDD Concentration Course IV (3 Credits)
Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7754 will join a cohort of students in a hybrid cross-listed EDUC 5754, complete all work/assignments for PBA 4 and related PBA 5 assessments. Max hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.

EDUC 7840 - Independent Study: EDUC (1-4 Credits)
Doctoral. Repeatable. Max Hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

Leadership for Educational Organizations with Principal Licensure, EdS

Introduction

The EdS degree program affords the opportunity for advanced graduate study and is available to those who already hold a master's degree (completed prior to admission into the EdS LEO program.) For the specialist degree, students will complete 9 semester hours of faculty advisor approved graduate-level coursework that constitute an area of focus, in addition to the 32 semester hours required in the Principal Licensure program. The Leadership for Educational Organizations EdS requires a total of 41 semester hours of coursework. Candidates must also successfully complete a comprehensive exam in the final semester.

Program Requirements

The 9 semester hours beyond the 32 semester hour principal licensure program must constitute an area of focus and/or a specific advancement of knowledge and skills for the license. Students can choose 9 semester

hours (3 courses) from the following options (or receive faculty approval for other relevant graduate-level coursework):

Code	Title	Hours
Select three of the following:		9
EDUC 7100	Leadership in Education	
EDUC 7230	Organizational Performance In Educational Contexts	
EDUC 7500	Strategic Human Capital Development	
EDUC 7510	Strategic Organizational Management	
EDUC 7520	Strategic System Improvement	
EDUC 7530	Strategic Leadership Development	
Total Hours		9

Leadership for Educational Organizations - Principal Licensure, MA

Introduction

The MA prepares district leaders for future-ready schools. Equipped with a focus on diversity and social justice and the skills and knowledge to develop a vision for a successful school, graduates pursue careers as elementary, middle, or high school principals and administrators to realize change at school and community levels. The MA is designed for those who do not already hold a graduate degree.

Program Requirements

Students will complete 32 semester hours required in the Principal Licensure (p. 447). Candidates must also successfully complete a comprehensive exam in the final semester.

Code	Title	Hours
EDUC 5751	Principal/Administrator Licensing I	3-9
EDUC 5752	Principal Administrator Licensing II	3-9
EDUC 5753	Principal/Administrator Licensing III	3-9
EDUC 5754	Principal or Administrator Licensing IV	3-9
Total Hours		12-36

Total: 32 semester hours for Principal Licensure. Administrator License - Executive Leadership Program

Introduction

Designed for the professional educator who, already holding a master's degree and preferably 5 years leadership experience in education, wishes to apply for an initial administrator license through the Colorado Department of Education and prepare for a career as a superintendent or other district level leader. In addition to coursework, the Colorado Department of Education also requires an exam. Information about Colorado Department of Education exam requirements can be found here: <https://www.cde.state.co.us/cdeprof/endorsementrequirements> (<https://www.cde.state.co.us/cdeprof/endorsementrequirements/>)

Program Requirements

The 12-semester-hour administrator licensure program combines weekend meetings with online work and hands-on clinical practice—usually completed in participants' home districts.

Code	Title	Hours
EDUC 7500	Strategic Human Capital Development	3
EDUC 7510	Strategic Organizational Management	3
EDUC 7520	Strategic System Improvement	3
EDUC 7530	Strategic Leadership Development	3
Total Hours		12

Principal Licensure

Introduction

LEO offers coursework that leads to eligibility to apply for the initial license for K-12 principal through the Colorado Department of Education. In addition to coursework, the Colorado Department of Education also requires an exam. Information about Colorado Department of Education exam requirements can be found here <https://www.cde.state.co.us/cdeprof/endorsementrequirements> (<https://www.cde.state.co.us/cdeprof/endorsementrequirements>).

Admission to the LEO principal licensure program is competitive. All principal licensure applicants must hold at least a bachelor's degree and a teaching or special services license; we also recommend principal licensure applicants have a minimum of three years of post-licensure teaching or special services experience. LEO's principal licensure program is project-based, requiring students to present evidence of meeting both state and national standards through performance based assessments. A 400-hour clinical-practice experience is integrated throughout the four-semester program.

Students submit performance-based assessment/content modules (PBAs) during the principal licensure program to an online assessment system. For successful principal licensure completion, PBAs not approved by the end of the fourth semester must be completed within the two subsequent semesters (not including summer.)

Note: Those already holding a master's degree and 5 years of leadership in education should also see the Administrator License - Executive Leadership (p. 446) Program for pursuing K-12 administrator (superintendent or district-level leadership) licensure.

Principal Licensure Cohort Options

Typically, cohorts are comprised of approximately 25 principal candidates who move through the four-semester principal licensure program together. We welcome applicants from all districts into our principal licensure cohorts. However, we also partner with metro-area districts to prepare leaders specifically for their schools.

Program Requirements

Principal Licensure Course Requirements:

Code	Title	Hours
EDUC 5751	Principal/Administrator Licensing I	3-9
EDUC 5752	Principal Administrator Licensing II	3-9

EDUC 5753	Principal/Administrator Licensing III	3-9
EDUC 5754	Principal or Administrator Licensing IV	3-9
Total Hours		12-36

Total: 32 semester hours for Principal Licensure. Learning, Developmental and Family Sciences

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Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Website: www.ucdenver.edu/education (<http://www.ucdenver.edu/education/>)

Overview

The MA program in Learning, Developmental and Family Sciences (LDFS) prepares students to facilitate the teaching/learning process and to lead and work in community-based environments. Thus, many students pursue the degree to enhance their skills as professional classroom teachers or lead in the community. The degree also provides skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, understanding family and community systems, motivation, and research is essential such as teaching at the community college and teaching-based colleges and universities levels, teaching adults, consulting, developing assessments, community-based leadership, and conducting program development and evaluation. Other students seek the MA as preparation for advanced study in educational psychology, psychology, learning sciences, family science and human development, research, or related fields.

Areas of Study

Two major areas of concentration are available: learning and human development and family relations:

- Regardless of the concentration area selected, all students must demonstrate competence in Learning, Developmental and Family Sciences by successfully completing 30 semester hours of relevant course work;
- Students complete a capstone experience, either an applied project or a master's thesis in consultation with their faculty advisor based on the students' professional and academic goals. Please see culminating capstone experience section for more details.

Learning

The concentration is committed to the systematic study of psychological, social, and cultural processes of learning and development, and design of environments that support optimal learning and development, drawing upon multidisciplinary nature of work. The concentration examines learning in various formal and informal contexts (e.g., learning in classrooms, schools, centers, communities, homes) from multiple perspectives (e.g., psychological, sociocultural, critical, design-based, neuroscience). Within the networks of professional and academic communities, students will engage in designing adaptive learning environments that facilitate optimal learning and developmental opportunities for participants in diverse educational and community contexts, including our unique urban context. The Learning concentration offers courses such as:

- Human Learning
- Human Development Over the Life Span
- Designing Environments for Learning and Development
- Mind, Brain, and Education
- Cognition and Instruction
- Motivation in Contexts
- Advanced Child Growth and Development
- Social Contexts of Adolescence

Human Development and Family Relations (HDFR)

Students will engage in developing their skills to work in and lead community-based organizations including, but not limited to secular, faith-based, for profit, nonprofit, school-based, and local, state, federal and international organizations. The importance of family diversity and social justice is stressed throughout the HDFR curriculum through its courses and experiences. Students can also develop their knowledge in family relations in preparation for doctorate studies in family science and human development or related areas.

The LDFS program does provide a pathway for MA students (HDFR and Learning areas) to pursue their PhD in Education and Human Development with a Family Science and Human Development concentration. For more information, please visit our School of Education and Human Development.

The HDFR area also provides classes to all School of Education and Human Development (SEHD) graduate programs, offering courses in family theories, family dynamics, and diverse family systems, Latino family, school and community systems, family resource management, leadership and organizations, grant writing and fundraising, program development and other family relations based courses.

Culminating Capstone Experience

All students must complete a culminating capstone experience in the MA in Learning, Developmental and Family Sciences, Human Development and Family Relations and Learning tracks. Students can choose between an applied project or thesis. Students should consult with their faculty advisor as they weigh their options for the capstone to choose the option which best matches their academic and professional goals.

Option 1: Applied Project

An applied project may take the form of an action research project, an applied development project, or an applied evaluation project. The applied project allows for considerable flexibility in the type of project undertaken.

Option 2: Thesis

The thesis provides experience in conducting an empirical investigation, but provides a great deal of flexibility based on students' interests. The investigation may be qualitative (involving interviews and observation) or quantitative (involving measured variables) or mixed-methods and should address a question of practical importance to the student and the field in general.

Students are expected to attend one of the required LDFS MA Capstone Orientation provide by the LDFS faculty during each academic year.

For more specific details concerning the Capstone please contact your faculty advisor.

Programs

- Learning, Developmental and Family Sciences, MA (p. 450)

Faculty

Faculty information is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/learning-developmental-family-sciences> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/learning-developmental-family-sciences/>)

Learning, Developmental and Family Sciences (LDFS) Courses

LDFS 5110 - Human Learning (3 Credits)

A review of the research on human learning, including related topics such as information processing and motivation. Various theories of learning are examined in-depth, and their applications to teaching and practices in schools (and in other educational settings) are considered. Repeatable.

Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5240 - Cognition and Instruction (3 Credits)

Explores recent developments in cognition and their implications for instructional practices. Includes theory and research in cognitive psychology and resultant educational practices. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5260 - Child Study and Observation (3 Credits)

Involves extensive, systematic observation of young children. Recorded observations are analyzed in terms of child development theories, children's background, setting variables, and are then presented in written and elaborated form. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

LDFS 5930 - Learning, Developmental and Family Sciences Internship (2-4 Credits)

Field-based experiences in settings (schools, businesses, governmental agencies, special projects) that are linked closely to the student's professional objectives. Requires a minimum of 150, 225 or 300 clock hours under supervision (two-four credit hours, respectively). Repeatable.

Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

LDFS 6100 - Advanced Child Growth and Development (3 Credits)
 Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education. Cross-listed with LDFS 7100. Repeatable. Max Hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 6140 - Social Contexts of Adolescence and Schooling (3 Credits)
 Systematic study of the major theories of adolescent growth in social contexts, emphasizing the social and cultural construction of the adolescent experience. Focuses on current research regarding adolescents and the implications of the research for education. Repeatable. Max hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 6200 - Human Development Over the Life Span (3 Credits)
 An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 7200. Repeatable. Max Hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 6220 - Adult Development (3 Credits)
 Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross listed with LDFS 7220. Repeatable. Max Hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 6320 - Mind, Brain, and Education (3 Credits)
 An introductory survey into contemporary theory and research in developmental cognitive neurosciences and their potential applications to education, aiming to explore how the brain learns, and what it means for learning and development. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6400 - Observation, Documentation and Assessment (3 Credits)
 This course focuses on developing competencies in observation, documentation, and assessment to inform understandings about children and teaching. Students will draw from child development and ecological theories to observe children's assets, then interpret and analyze how children learn and develop. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6410 - Social Foundations of Family and Community (3 Credits)
 In this course, students of early childhood education will learn to think and act reflectively, critically, and socially, informed by the roles of families and communities of young learners. Course readings, observation, documentation, and reflection provide foundations for the development of relational perspectives on social justice. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6420 - The Environment as the Third Teacher (3 Credits)
 This course will provide students with an understanding of the relationship between the Learning Sciences and Reggio-Inspired practices, and how this relationship can be applied to the design of engaging and dynamic learning environments. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6600 - Motivation in Contexts (3 Credits)
 Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale. Applications are considered for both educators and learners in various social and cultural learning contexts. Cross listed with LDFS 7600. Max hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 6750 - Designing Environment for Learning and Development (3 Credits)
 Introduction to concepts, findings, and research methods relevant to theory and research in the Learning Sciences, with specific focus on how those concepts and findings apply to design learning across settings. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)
 Repeatable. Max Hours: 12 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 12.

LDFS 6910 - Practicum Reflections on Learning (3 Credits)
 This course focuses on the pursuit of praxis within the student teacher residency. Reflection on course resources, engagement in ongoing processes of documentation, and reflection within a small group meeting format drive social construction of knowledge about learning and development. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 6950 - Culminating Capstone Experience (1-3 Credits)
 This course provides a learning environment for students to complete an applied project/thesis in education and human development contexts as part of their final capstone experience in the Master's in Learning, Developmental and Family Sciences. Repeatable. Max hours: 3 Credits.
 Grading Basis: Letter Grade with IP
 Repeatable. Max Credits: 3.
 Additional Information: Report as Full Time.

LDFS 7100 - Advanced Child Growth and Development (3 Credits)
 Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education. Cross listed with LDFS 6100. Max hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 7120 - Family Dynamics (3 Credits)
 Review and analysis of issues related to families with exceptional or at-risk young children. Topics include coping skills, family involvement, parent-child interaction, and sources of support. Special attention is given to current research and its application to early intervention. Repeatable. Max Hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

LDFS 7140 - Advanced Studies in Youth Development (3 Credits)
 Systematic study of the current research and major theories of youth growth, emphasizing the social and cultural construction of the youth experience. Focuses on current theories and research regarding youth within contemporary social structures in multidisciplinary perspectives. Max hours: 3 Credits.
 Grading Basis: Letter Grade

LDFS 7200 - Human Development Over the Life Span (3 Credits)
An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 6200. Max hours: 3 Credits.
Grading Basis: Letter Grade

LDFS 7220 - Adult Development (3 Credits)
Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross-listed with LDFS 6220. Max hours: 3 Credits.
Grading Basis: Letter Grade

LDFS 7600 - Motivation in Contexts (3 Credits)
Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale. Applications are considered for both educators and learners in various social and cultural learning contexts. Cross-listed with LDFS 6600. Max hours: 3 Credits.
Grading Basis: Letter Grade

LDFS 7712 - Learning and Human Development (3 Credits)
Students apply major theories from learning and human development theories to problems of practice and research related to education and community contexts. Restriction: Restricted to EDHD-PhD, LDRE-EDd, and SPSY-PsyD majors within the School of Education and Human Development. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to EDHD-PhD, LDRE-EDd, and SPSY-PsyD majors within the School of Education and Human Development.

LDFS 7840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)
Repeatable. Max Hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

Learning, Developmental and Family Sciences, MA

Introduction

The MA program in Learning, Developmental and Family Sciences (LDFS) prepares students to facilitate the teaching/learning process and to lead and work in community-based environments. Thus, many students pursue the degree to enhance their skills as professional classroom teachers or lead in the community. The degree also provides skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, understanding family and community systems, motivation, and research is essential such as teaching at the community college and teaching-based colleges and universities levels, teaching adults, consulting, developing assessments, community-based leadership, and conducting program development and evaluation. Other students seek the MA as preparation for advanced study in educational psychology, psychology, learning sciences, family science and human development, research, or related fields.

Program Requirements

Areas of Study

Two major areas of concentration are available: learning and human development and family relations:

- Regardless of the concentration area selected, all students must demonstrate competence in Learning, Developmental and Family Sciences by successfully completing 30 semester hours of relevant course work;
- Students complete a capstone experience, either an applied project or a master’s thesis in consultation with their faculty advisor based on the students’ professional and academic goals. Please see culminating capstone experience section for more details.

Learning

The concentration is committed to the systematic study of psychological, social, and cultural processes of learning and development, and design of environments that support optimal learning and development, drawing upon multidisciplinary nature of work. The concentration examines learning in various formal and informal contexts (e.g., learning in classrooms, schools, centers, communities, homes) from multiple perspectives (e.g., psychological, sociocultural, critical, design-based, neuroscience). Within the networks of professional and academic communities, students will engage in designing adaptive learning environments that facilitate optimal learning and developmental opportunities for participants in diverse educational and community contexts, including our unique urban context.

Code	Title	Hours
Required Courses		
LDFS 5110	Human Learning	3
Select one of the following:		
LDFS 6100 or LDFS 6140 or LDFS 6200	Advanced Child Growth and Development Social Contexts of Adolescence and Schooling Human Development Over the Life Span	3
LDFS 6750	Designing Environment for Learning and Development	3
RSEM 5100	Basic Statistics	3
RSEM 5120	Introduction to Research Methods	3
LDFS 6950	Culminating Capstone Experience	1-3
PPMA Inventory	https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/	12
Total Hours		28-30

Human Development and Family Relations (HDFR)

Students will engage in developing their skills to work in and lead community-based organizations including, but not limited to secular, faith-based, for profit, nonprofit, school-based, and local, state, federal and international organizations. The importance of family diversity and social justice is stressed throughout the HDFR curriculum through its courses and experiences. Students can also develop their knowledge in family relations in preparation for doctorate studies in family science and human development or related areas.

The LDFS program does provide a pathway for MA students (HDFR and Learning areas) to pursue their PhD in Education and Human Development with a Family Science and Human Development concentration. For more information, please visit our School of Education and Human Development.

The HDFS area also provides classes to all School of Education and Human Development (SEHD) graduate programs, offering courses in family theories, family dynamics, and diverse family systems, Latino family, school and community systems, family resource management, leadership and organizations, grant writing and fundraising, program development and other family relations based courses.

Code	Title	Hours
Required Courses		
HDFS 6000	Family Theories	3
Select one of the following:		
LDFS 6100	Advanced Child Growth and Development	3
or LDFS 6140	Social Contexts of Adolescence and Schooling	
or LDFS 6200	Human Development Over the Life Span	
LDFS 5110	Human Learning	3
RSEM 5100	Basic Statistics	3
RSEM 5120	Introduction to Research Methods	3
LDFS 6950	Culminating Capstone Experience	1-3
PPMA Inventory		12
https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Total Hours		28-30

Culminating Capstone Experience

All students must complete a culminating capstone experience in the MA in Learning, Developmental and Family Sciences, Human Development and Family Relations and Learning tracks. Students can choose between an applied project or thesis. Students should consult with their faculty advisor as they weigh their options for the capstone to choose the option which best matches their academic and professional goals.

Option 1: Applied Project

An applied project may take the form of an action research project, an applied development project, or an applied evaluation project. The applied project allows for considerable flexibility in the type of project undertaken.

Option 2: Thesis

The thesis provides experience in conducting an empirical investigation, but provides a great deal of flexibility based on students' interests. The investigation may be qualitative (involving interviews and observation) or quantitative (involving measured variables) or mixed-methods and should address a question of practical importance to the student and the field in general.

Students are expected to attend one of the required LDFS MA Capstone Orientation provide by the LDFS faculty during each academic year. For more specific details concerning the Capstone please contact your faculty advisor.

Registration for Capstone

All students are required to register for LDFS 6950 Culminating Capstone Experience as part of their degree requirements. LDFS 6950 is offered in fall semester only and should be taken in students' final fall in the program.

Students who do not complete their applied project or defend their thesis in the fall semester they are registered for LDFS 6950 are able to continue working on their applied project or thesis beyond the fall semester with faculty permission.

Please contact your academic advisor for more information on registering for the culminating capstone experience.

Learning Design and Technology

Office: 1380 Lawrence Street Center, 701

Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Website: <https://education.ucdenver.edu/>

Overview

The Learning Design and Technology (LDT) MA program helps people use various digital and social media tools and technologies for learning, teaching, and professional leadership. Applying sound principles of learning, instructional and media design, and professional development, you will use a variety of learning strategies and technologies - such as digital and online media, digital storytelling, social media and networking, games, and smart and mobile tools - to support learning and development goals in school and workplace settings. Throughout the program, you will engage in assessment and evaluation activities to improve services, be accountable for outcomes, and develop professional identities as thought leaders in your professional communities of practice. The LDT MA program is fully online and may be completed in two years.

Technology Expectations

The LDT MA program relies heavily on computers and related technologies for course delivery and learning activities. Students are expected to use their campus email accounts and check them frequently. Students need convenient, consistent, and reliable access to Internet-connected computers. In addition to textbooks, software purchases may be required or recommended for specific courses.

The LDT 30 semester hour MA program (<https://education.ucdenver.edu/academics/graduate/learning-design-technology/>) offers different Plan of Study options to match various professional roles. Students work with Faculty Mentors to select an option in alignment with professional goals:

1. K-12 Teachers
2. Youth Library Professionals (in K-12 settings and public libraries)
3. College Instructors
4. Learning Experience Designers (in workplace settings)
5. Learning Experience Designers (in K-20 settings)

Programs

Learn more about our Learning Design and Technology MA, certificates and endorsement programs below.

- Learning Design and Technology, MA (p. 454)
- Teacher Librarian Endorsement (p. 454)
- Leadership: P-12 Library Programs (p. 455)
- Leadership for Learning Design and Technology Certificate (p. 455)
- Learning Experience Design Certificate (p. 455)
- Online Teaching and Learning Certificate (p. 456)

- Open Digital Education Certificate (p. 456)
- Instructional Technology Specialist Endorsement (p. 456)

Faculty

Information about LDT faculty is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/learning-design-technology> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/learning-design-technology/>)

Instructional Design and Technology (INTE and SCHL)

INTE 5000 - Maker Studio (3 Credits)

The maker studio is a collaborative practicum within the context of makerculture, projectbased learning, and learning experience design. The course focuses on the practical translation of learning design theory to learning design reality, presenting learners with challenges to be resolved with creative solutions. Cross-listed with INTE 4000. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5100 - Learning Experience Design (3 Credits)

Instructional design is the process used to analyze, design, develop, and evaluate learning solutions. You will identify a gap in learning or performance and design a learning solution in the form of courses units, modules, and other instructional resources. Cross-listed with INTE 4100. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5150 - Engaging in Education Advocacy (3 Credits)

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 7150. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5200 - Designing Online Learning Experiences (3 Credits)

This course helps educators transition to teaching online. Create online learning activities, assessments, and resources. Learn how to establish a strong online teaching presence. Explore blended learning environments, use of set curriculum, open educational resources (OER), family support, communication strategies, digital citizenship, and accessibility concerns. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5250 - Teaching Strategies for Online and Blended Learning (3 Credits)

This course provides a foundation for effective online teaching strategies. Learning essentials include: affording more reflective, engaging, inventive, and successful online learning experiences; fostering improved presence; employing skilled management techniques; and unpacking tools, habits, and processes for effective learning. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5300 - Media Literacy & Digital Citizenship (3 Credits)

In this course students learn to create, use, extend, and evaluate media products to support decision-making and real world problem-solving. Students also become more aware of the significant role of mass media, popular culture, and digital media in our lives. Cross listed with INTE 4300. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5320 - Games and Learning (3 Credits)

This course examines the use of games for learning and education across formal and informal environments. Students will survey contemporary learning theory, media, trends, and challenges related to designing and playing games in informal, community-based, online, and school settings. Cross listed with INTE 4320. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5340 - Learning with Digital Stories (3 Credits)

This course reviews the uses of digital storytelling for learning. Develop and publish a short digital story that tells something important about you and your interests. Explore ways that creating or using digital stories can aid learning and personal growth. Cross-listed with INTE 4340. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5360 - Critical Digital Pedagogy (3 Credits)

Critical Digital Pedagogy is an overview of the intersections between digital technology and critical pedagogy. The course focuses on theory, practice, design and leadership in digital learning, open education, and collaboration with the larger community of educators concerned with critical digital pedagogy. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5370 - Open Education (3 Credits)

Open Education is an overview of the open education and open pedagogy movement, both the ideology and practices associated with working in the commons. As knowledge creators and learning designers, students will gain a greater understanding of the rights and responsibilities of open access, open design, open educational resources, and the issues. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5660 - Developing Self-Paced Online Modules (3 Credits)

Students use a variety of tools and strategies to develop self-paced eLearning courseware, such as tutorials. The course covers critical aspects of the instructional development process that support the creation of effective self-paced online learning experiences, materials and resources. Cross-listed with INTE 4660. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5665 - Learning with Social Media and Networking (3 Credits)

The focus of this course is on how educators leverage networked social tools, technologies, and environments to address educational needs, opportunities, and problems of practice; and establish and nurture their own professional learning through participation in digital cultures. Cross-listed with INTE 4665. Max hours: 3 Credits. Grading Basis: Letter Grade
Typically Offered: Fall, Spring.

INTE 5670 - Crafting Synchronous Learning (3 Credits)

Webinars and other live online events are an increasingly popular approach to the delivery of learning and professional development opportunities. Informed by theory and research, students plan for and facilitate live learning events delivered via synchronous online technologies. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5680 - Producing Media for Learning (3 Credits)

Students develop and integrate media resources into eLearning environments, applying principles of media selection and multimedia learning. Students explore a variety of tools for producing audio, video, and multimedia content and examine ways to enhance eLearning courses through multimedia presentation and engagement resources. Cross-listed with INTE 4680. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5711 - Creative Designs for Instructional Materials (3 Credits)

This course is a project-based exploration of design theories, principles, and best practices for communicating information to diverse learning audiences. Students apply unique design approaches and formats to the creation of materials for teaching, learning, and being of service to underrepresented communities. Cross-listed with INTE 4711. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5830 - Workshop: Learning Technologies (0.5-4 Credits)

Specific titles vary depending upon the specific skill areas within learning technologies. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

INTE 5840 - Independent Study: Learning Technologies (1-4 Credits)

Restriction: Restricted to graduate level students. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

INTE 6720 - Research in Learning Design and Technology (3 Credits)

Analysis, evaluation, and production of research in instructional technology. Methods for observing instruction, assessing learning, and collecting participants reports to improve instruction. Development of recommendations for action based on research findings. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 6730 - Digital Pedagogy Lab (2-3 Credits)

Digital Pedagogy Lab is an international professional development gathering for educators committed to issues of diversity, equity, inclusion, critical digital pedagogy and imagining a new future for education. The Lab is a space for teachers, students, librarians, administrators, and technologists interested in inquiry, praxis, and social justice. Max hours: 6 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 6.

INTE 6750 - Trends and Issues in Learning Design and Technology (3 Credits)

This course examines definitions, history, core concepts, and current trends and issues related to the practice of instructional technology. Topics include instructional systems design, theories of learning and instruction, change management, performance improvement, emerging technologies, equity and access, and mobile learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 6840 - Independent Study: Learning Technologies (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

INTE 6930 - Internship: Learning Technologies (3 Credits)

Placement in a business, school or field setting where professional skills are applied to assess needs, design, develop and evaluate an instructional system, and provide leadership for change. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

INTE 6999 - Leadership for Technology Innovation (3 Credits)

This course examines principles and strategies for leadership in a school, library, district, or organization aiming to improve its use of educational technology. Course learning essentials include how to: deal with competing voices; promote organizational change; assess and analyze technology use; pursue continuous improvement; employ strategic planning practices; implement effective programs; ensure sound professional development; wrestle with pressing leadership challenges; and secure funding (grant writing). Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7100 - Professional Learning and Technology (3 Credits)

Examines research surrounding the design and delivery of professional development (PD) programs in K20 and workplace settings. Projects and activities address: adult learning; PD models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7110 - Mentoring, Coaching and Training (3 Credits)

In this course students examine research surrounding the design and delivery of professional learning (PL) programs in K20 and workplace settings. Projects and activities address: adult learning; PL models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7130 - Professional Learning: Perspectives and Practices (3 Credits)

In this course students develop and evaluate large-scale learning initiatives in K20 and workplace settings. Topics include: frameworks for evaluating job performance based on professional learning standards; planning, delivering, and evaluating professional learning initiatives; research models; and performance improvement tools and resources. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7150 - Engaging in Education Advocacy (3 Credits)

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 5150. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7930 - Internship: Professional Learning (3 Credits)

Working under the direction of field and academic supervisors in field settings, contribute to projects intended to help educators and other workers improve their job performance. Apply your knowledge to complex problems of practice, thus preparing for ongoing leadership opportunities. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5030 - Cultivating Learning Skills in Library Leadership (3 Credits)

In an increasingly shifting world and work force, both our student and adults will need to demonstrate learning skills to thrive in K-12 and post-secondary world. Teacher-librarians are guides for students and staff in ALL learning skills. Collaboration, innovative thinking, critical thinking and are areas of library leadership covered. Cross-listed with SCHL 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5040 - Information Storage and Utilization (2 Credits)
Provides basic principles and practices of utilizing standard methods for organizing, accessing and storing information. Includes cataloging and classification in text-based and electronic systems. Max hours: 2 Credits.
Grading Basis: Letter Grade

SCHL 5100 - School Libraries in the Digital Age (3 Credits)
An introduction to the School Library profession, including its history, standards, organizations, and current trends. Course focuses on foundational principles and roles of school librarianship, as well as methods for developing a culturally responsive resource collection, both print and electronic. Max hours: 3 Credits.
Grading Basis: Letter Grade

SCHL 5160 - Managing School Libraries (3 Credits)
Case studies in the organization and administration of school library and instructional leadership of programs and projects. Topics include project management, personnel administration, budget development, management strategies, copyright and intellectual freedom. Cross-listed with SCHL 4160. Max hours: 3 Credits.
Grading Basis: Letter Grade

SCHL 5200 - Promoting Literature in Schools (3 Credits)
Approaches the school library as a resource to promote literacy and development in children and young adults. Topics include genres of literature, methods for advising students towards appropriate reading and media resources, and the promotion of multiple literacies - information, new media, and transliteracy. Max hours: 3 Credits.
Grading Basis: Letter Grade

SCHL 5830 - School Library Workshop (0.5-4 Credits)
Specific content and titles vary depending upon the particular school library skills addressed in the course. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

SCHL 5913 - School Library Field Experience (3 Credits)
Field experiences in selected K-12 school libraries that meet a high professional standard. The course serves as a capstone experience for endorsement and master's degree plans and helps induct students into the School Library profession by bridging theory and practice. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP

Learning Design and Technology, MA Introduction

The courses in the Learning Design and Technology (LDT) MA program are fully online unless specified otherwise. Once admitted, students begin a plan of study that typically takes about two years to complete. You will create an online portfolio, referred to as a base camp. The base camp serves as a learning resource for your students, colleagues, and other professionals. The base camp is created throughout the LDT program and submitted for faculty review during the final semester. Consult the program website <https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology> (<https://education.ucdenver.edu/academic-services/student-resources/graduate/learning-design-technology/>) for more information about specific plans of study, course offerings and expectations of the program.

Program Requirements

Courses are offered only in certain semesters and courses should be taken in a particular sequence based on when you start the program.

Advising is required prior to enrolling in a course, even as a non-degree student, in order to ensure the most effective course sequencing and availability of courses.

MA Learning Design and Technology requires a total of 30 graduate-level semester hours plus portfolio in the final semester. Course requirements for the 30 semester hours are as follows:

- Students select one or two certificates from the five certificate options:
 - Leadership: P-12 Library Program Certificate (p. 455)
 - Leadership for Learning Design and Technology Certificate (p. 455)
 - Learning Experience Design Certificate (p. 455)
 - Online Teaching and Learning Certificate (p. 456)
 - Open Digital Education Certificate (p. 456)
- INTE 5665 Learning with Social Media and Networking and INTE 6720 Research in Learning Design and Technology are required courses for the MA if not completed via a certificate
- Additional coursework to reach a total of 30 semester hours can be any graduate-level INTE course (INTE 6930 Internship: Learning Technologies is recommended) OR from the Thematic Course Categories (<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/>) plus Faculty Advisor approval

Teacher Librarian Endorsement Introduction

The Teacher Librarian K-12 endorsement program within the LDT master's degree program is a revised and approved teacher librarian education program that leads to the Colorado Department of Education (CDE) endorsement for teacher librarians. The program integrates 21st Century Learning Standards as approved by the American Association of School Libraries with Common CDE content standards and leadership competencies. As a teacher librarian, you will provide collaborative instructional planning, facilitation of professional learning, utilization of information literacy and media literacy, online instructional resources, and teacher leadership through the management of your library program.

The courses in this program are fully online unless specified otherwise. Once admitted, students begin a plan of study that typically takes about 18 months to complete. Consult the program website for more information <https://education.ucdenver.edu/academics/certificates-licenses-and-endorsements> (<https://education.ucdenver.edu/academics/certificates-licenses-and-endorsements/>)

Program Requirements

Students have a choice between a teacher librarian endorsement-only and a full master's program with or without a teacher-librarian endorsement. The endorsement requires a minimum of 24 graduate semester hours. Students complete a plan of study consisting of courses and professional field experience. Students must be licensed as a teacher or plan to complete a teacher license prior to seeking the additional endorsement as a Teacher Librarian. This is a Colorado Department of Education requirement.

Courses are offered only in certain semesters and courses should be taken in a particular sequence based on when you start the program. Advising is required prior to enrolling in a course, even as a non-degree

student, in order to ensure the most effective course sequencing and availability of courses.

Select one of the following options.

Option A: The CDE-approved Teacher Librarian endorsement consists of 24 semester hours, which includes the Leadership: P-12 Library Program Certificate (p. 455) and the Open Digital Education Certificate (p. 456) plus SCHL 5913 School Library Field Experience.

Option B: The CDE-approved Teacher Librarian endorsement consists of 24 semester hours, which includes the Leadership: P-12 Library Program Certificate (p. 455) and two endorsement-approved courses from other SEHD or LDT certificates plus the required SCHL 5913 School Library Field Experience, INTE 5300 Media Literacy & Digital Citizenship and INTE 5360 Critical Digital Pedagogy.

Option A Requirements

Code	Title	Hours
SCHL 5030	Cultivating Learning Skills in Library Leadership ¹	3
SCHL 5160	Managing School Libraries ¹	3
SCHL 5200	Promoting Literature in Schools ¹	3
INTE 5300	Media Literacy & Digital Citizenship ²	3
INTE 5360	Critical Digital Pedagogy ²	3
INTE 5370	Open Education ²	3
INTE 5340	Learning with Digital Stories ²	3
or INTE 5000	Maker Studio	
SCHL 5913	School Library Field Experience	3
Total Hours		24

¹ Leadership: P-12 Library Program Certificate

² Open Digital Education Certificate

Option B Requirements

Code	Title	Hours
SCHL 5030	Cultivating Learning Skills in Library Leadership ¹	3
SCHL 5160	Managing School Libraries ¹	3
SCHL 5200	Promoting Literature in Schools ¹	3
INTE 5360	Critical Digital Pedagogy ²	3
INTE 5300	Media Literacy & Digital Citizenship ²	3
SEHD Endorsement-Approved Course		6
SCHL 5913	School Library Field Experience	3
Total Hours		24

¹ Leadership: P-12 Library Program Certificate

² Open Digital Education Certificate

Leadership: P-12 Library Programs Certificate

Introduction

Graduate Certificate

Equips teacher librarians to lead the way in digital, media, and information literacy development in their schools and create an inclusive, future-ready learning culture for building essential student skills.

Program Requirements

Code	Title	Hours
Required Courses		
SCHL 5030	Cultivating Learning Skills in Library Leadership	3
SCHL 5160	Managing School Libraries	3
Select one of the following:		3
INTE 5300	Media Literacy & Digital Citizenship	
SCHL 5200	Promoting Literature in Schools	
Total Hours		9

Leadership for Learning Design and Technology Certificate

Introduction

CU Denver's Leadership for Learning Design and Technology certificate focuses on transformative change, culture, and initiative for modern learning organizations; with distinct themes of vision building, culture shifting, innovation nurturing, business modeling, and knowledge management.

Program Requirements

Through these courses you will participate in a learning community that stresses inclusive values, social learning, open sharing, and knowledge construction. You will learn about emerging trends and issues and relevant research and best practices, and use a variety of digital media platforms and development tools. The course assignments focus on solving professional problems of practice in your own school and organizational settings.

Code	Title	Hours
Select four of the following:		12
INTE 6999	Leadership for Technology Innovation	
INTE 6720	Research in Learning Design and Technology	
INTE 6750	Trends and Issues in Learning Design and Technology	
INTE 7100	Professional Learning and Technology	
INTE 7110	Mentoring, Coaching and Training	
INTE 7130	Professional Learning: Perspectives and Practices	
Total Hours		12

Learning Experience Design Certificate

Introduction

Graduate Certificate

CU Denver's Learning Experience Design certificate focuses on human centered design, learning engagement and motivation, and learning frameworks. You'll explore distinct themes of design-thinking, learning aesthetics, universal design, and system usability.

Program Requirements

Through these courses you will participate in a learning community that stresses inclusive values, social learning, open sharing, and knowledge construction. You will learn about emerging trends and issues and

relevant research and best practices, use a variety of digital media platforms and development tools, and design a number of learning products and resources worthy of showcasing in a professional portfolio. The course assignments focus on solving professional problems of practice in your own school and organizational settings.

Code	Title	Hours
Required Courses		
INTE 5100	Learning Experience Design	3
Select three of the following:		9
INTE 5680	Producing Media for Learning	
INTE 5660	Developing Self-Paced Online Modules	
INTE 5320	Games and Learning	
INTE 5711	Creative Designs for Instructional Materials	
Total Hours		12

Online Teaching and Learning Certificate

Introduction

CU Denver's Online Teaching and Learning certificate focuses on effective online & hybrid learning designs, high impact practices, and modern learners; with distinct themes of instructional design, inclusive pedagogies, active learning, and emerging pedagogies.

Program Requirements

Through these courses you will participate in a learning community that stresses inclusive values, social learning, open sharing, and knowledge construction. You will learn about emerging trends and issues and relevant research and best practices, and use a variety of digital media platforms and development tools. The course assignments focus on solving professional problems of practice in your own school and organizational settings.

Code	Title	Hours
Required Courses		
INTE 5200	Designing Online Learning Experiences	3
INTE 5250	Teaching Strategies for Online and Blended Learning	3
Select two of the following:		6
INTE 5340	Learning with Digital Stories	
INTE 5665	Learning with Social Media and Networking	
INTE 5670	Crafting Synchronous Learning	
Total Hours		12

Open Digital Education Certificate

Introduction

The Open Digital Education certificate focuses on critical digital pedagogy, critical instructional design, open pedagogy, and media literacy; with distinct themes of humanistic education, centered on learner equity, inclusion, agency, community, and creativity.

Program Requirements

Through these courses you will participate in a learning community that stresses inclusive values, social learning, open sharing, and knowledge

construction. You will learn about emerging trends and issues and relevant research and best practices, and use a variety of digital media platforms and development tools. The course assignments focus on solving professional problems of practice in your own school and organizational settings.

Code	Title	Hours
Required Courses		
INTE 5300	Media Literacy & Digital Citizenship	3
INTE 5360	Critical Digital Pedagogy	3
INTE 5370	Open Education	3
Select one of the following:		3
INTE 5000	Maker Studio	
INTE 5340	Learning with Digital Stories	
Total Hours		12

Instructional Technology Specialist Endorsement

Introduction

Students already holding a current Colorado teacher license are able to pursue an added endorsement in Instructional Technology (IT). Added endorsements allow current teachers to add an additional area of specialization to their current teacher license in order to become qualified to teach in multiple areas. The IT added endorsement might be pursued alone or in combination with the Learning Design and Technology MA.

It is students' responsibility to ensure they are meeting the requirements for the endorsement. Students should refer to the Colorado Department of Education (CDE) website (http://www.cde.state.co.us/cdeprof/licensure_authorization_landing/) for the most current information. Approved Program Verification for added endorsements is completed by the School of Education & Human Development, but endorsements are granted by the Colorado Department of Education. Individual state requirements vary and may include teaching examinations in addition to a valid teaching license. Students should consult with the Colorado Department of Education and/or the state they will be living in for the most updated endorsement requirements.

The added endorsement in Instructional Technology-K-12 Specialist Level is for seasoned teachers with 3 or more years of licensed classroom experience who want to bring technology into their own classrooms, schools, and districts; move into teaching technology; or support other teachers during professional development and in-service trainings. Teachers with 3 or more years of licensed experience are able to earn this added endorsement by completing the 24 semester hour IT endorsement program (or 30 semester hours for those completing the IT endorsement along with the LDT MA).

Program Requirements

The Instructional Technology Specialist Endorsement program is 24 credits.

Complete one of the following certificates: 12 credits

- Open Digital Education Certificate (p. 456)
- Leadership in Learning Design and Technology Certificate (p. 455)
- Online Teaching and Learning Certificate (p. 456)

Plus INTE 6930 Internship: Learning Technologies (3 credits)

Plus any three 3-credit hour courses (9 credits) included in the other LDT certificates listed not selected as your certificate. Please select the three 3-credit courses that best meet your professional needs and interests.

Open Digital Education Certificate

Code	Title	Hours
INTE 5300	Media Literacy & Digital Citizenship	3
INTE 5360	Critical Digital Pedagogy	3
INTE 5370	Open Education	3
Select one of the following:		3
INTE 5340	Learning with Digital Stories	
INTE 5000	Maker Studio	
Total Hours		12

Leadership in Learning Design and Technology Certificate

Code	Title	Hours
Select four of the following:		12
INTE 6720	Research in Learning Design and Technology ¹	3
INTE 6999	Leadership for Technology Innovation	3
INTE 6750	Trends and Issues in Learning Design and Technology	3
INTE 7100	Professional Learning and Technology	3
INTE 7110	Mentoring, Coaching and Training	3

¹ If you are seeking IT Endorsement only or MA with IT Endorsement, this course is **required**

Online Teaching and Learning Certificate

Code	Title	Hours
Required		
INTE 5200	Designing Online Learning Experiences	3
INTE 5250	Teaching Strategies for Online and Blended Learning	3
Select two of the following:		6
INTE 5340	Learning with Digital Stories	
INTE 5665	Learning with Social Media and Networking	
INTE 5670	Crafting Synchronous Learning	
Total Hours		12

Research and Evaluation Methods

Office: Lawrence Street Center, 701

Telephone: 303-315-6300

Email: academicservices@ucdenver.edu

Website: <https://education.ucdenver.edu/>

Overview

The MA in Research and Evaluation Methods (REM) degree prepares students to lead in professional practice in the following responsibilities:

1. interpreting, analyzing, and applying research in educational settings;
2. applying knowledge about research methods, statistics, and measurement; and
3. applying inquiry skills and creative thought in solving practice-based problems.

Graduates of the program typically work in school district research/assessment departments, state or federal government agencies, research and evaluation firms, non-profit organizations, or companies that have data/research offices.

Students acquire the skills necessary for a variety of roles in educational and teaching settings or community environments where knowledge of learning, development, assessment, and research is essential. Many of our graduates also seek this MA as preparation for advanced study in educational psychology, assessment, research methods, and related fields.

Programs

- Research and Evaluation Methods, MA (p. 460)
- Applied Measurement Certificate (p. 461)
- Applied Statistical Modeling Certificate (p. 461)
- Classroom Assessment Certificate (p. 461)
- Program Evaluation Certificate (p. 462)

Faculty

Focusing on applied skills and techniques, students will learn both quantitative and qualitative research methods. Through research and data analysis, students are encouraged to focus on larger issues of social injustices.

Information about faculty in this program is available here (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/research-evaluation-methods/>).

Research and Evaluation Methods (RSEM) Courses

RSEM 5001 - Special Topics (3 Credits)

Specific topics vary from semester to semester. Cross listed with RSEM 4001. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 5050 - Classroom Assessment (3 Credits)

This course strengthens educator classroom assessment practice. It provides students with a foundational understanding of quality measurement practices to support evaluation of assessment instruments and tasks, determination of appropriate scoring approaches, and interpretation of state and district assessment results. It also deepens students' formative assessment practice supported by practical strategies and tools. Finally, it facilitates student integration of formative and summative uses of assessment with instruction and planning. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 5080 - Research In Schools (3 Credits)

Provides teachers with the competencies necessary for examining their professional experiences using formal and informal methods of inquiry. Teachers become more reflective practitioners who investigate questions that arise from their work in schools. The course also prepares teachers to critique published research in a thoughtful manner. The intended audience for the course is beginning and experienced P-12 teachers. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

RSEM 5100 - Basic Statistics (3 Credits)

A first-level course on the use and interpretation of descriptive and inferential statistics. Topics covered include: frequency distributions, measures of central tendency and measures of variability; shapes of distributions; standard scores; scattergrams, correlation and regression; and t-tests. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

RSEM 5110 - Introduction to Measurement (3 Credits)

A first-level course that examines the nature and purpose of psychological measurement. Particular attention is paid to the concepts of reliability, validity, norms, interpretation of scores, response sets, fairness in testing, and norm-referenced vs. criterion-referenced interpretation of scores. A variety of instruments that are used to measure human attributes and behaviors are studied. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

RSEM 5120 - Introduction to Research Methods (3 Credits)

This is a survey course that examines the purposes of research, the methods of quantitative, qualitative, and mixed research, and the processes involved in research studies. The primary aims of this course are to improve your skills as an informed consumer of research and to provide you with the skills to conduct your own research. Cross-listed with RSEM 4120. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 5600 - Issues in Assessment Development (3 Credits)

This is the first course of a three#course series for a Classroom Assessment Certificate. The course focuses on developing the conceptual knowledge and technical skills required to help K#12 practitioners to develop valid, reliable, and fair assessment of student learning. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 5610 - Formative and Summative Assessment in the Classroom (3 Credits)

This is the second course of a three#course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning. Prereq: RSEM 5600. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 5600

RSEM 5620 - Analyzing, Using, and Reporting Assessment Results (3 Credits)

This is the third course of a three#course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning. Prereq: RSEM 5610. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 5610

RSEM 5800 - Workshop: Topics in Research and Evaluation Methodology (1-4 Credits)

Topics and credit hours vary from term to term. Often workshops address a current topic in research, evaluation, or measurement by considering its scholarly foundations and its application to schools and other educational settings. Repeatable. Max Hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

RSEM 5840 - Independent Study: RSEM (1-4 Credits)

Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

RSEM 5910 - Practicum in Research and Evaluation Methodology (1-4 Credits)

Supervised work in projects that provide experience in data analysis, research, measurement, or evaluation. Requires a minimum of 75, 150, 225, or 300 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Repeatable. Max Hours: 8 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 8.

RSEM 6050 - Seminar in Assessment Policy Issues (3 Credits)

Three public policy issues involving educational assessment are analyzed. The policy issues selected vary to reflect current policy debates. Sample issues are school accountability, grading and report cards, performance-based graduation standards, classification of students as having special needs, merit pay for teachers, and retaining students in grade. Each analysis examines (a) policy history; (b) value assumptions and constituency interests; (c) validity of assessment procedures; and (d) consequences of policy alternatives. Prereq: RSEM 5050 or RSEM 5110. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Prereq: RSEM 5050 or RSEM 5110

RSEM 6200 - Single Case Research Design for Education (3 Credits)

This course provides an overview of Single Case research Design (SCRD) within educational settings. The course will describe single case designs (SCD), specify the types of questions that SCD's are designed to answer, discuss the internal and external validity of SCD's, outline SCD standards, and describe implementation of different SCRD's. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 6500 - Teacher as Researcher (3 Credits)

Taken concurrently with Contextual Curriculum II, this course provides opportunities to engage in inquiry while analyzing professional experiences within their classroom context, sharing data/results from an action research project and critiquing and synthesizing published educational research. Max Hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 6950 - Master's Thesis (1-4 Credits)

A master's thesis is part of the degree track options. Credit hours, topic, and workload are determined by the student's advisor. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

RSEM 7000 - Doctoral Seminar in Research Methods (3 Credits)

Designed for students beginning doctoral work, explores conceptional and practical bases for doing and evaluating educational research. The chain of reasoning linking the conceptualization of a research problem, the posing of questions in a social process of inquiry, and the collection and interpretation of evidence is examined through the use of examples. Restriction: Restricted to EDHDPHD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHDPHD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

RSEM 7001 - Applied Research Methods I (3 Credits)

Introduces students to principles of quality research design, and provides a conceptual and hands-on procedural introduction to quantitative and qualitative methods common in education-related research. Takes an explicit focus on understanding and mitigating potential biases in research methods and design. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to LDRE EDD majors within the School of Education and Human Development

RSEM 7002 - Applied Research Methods II (3 Credits)

Prepares students with conceptual knowledge and procedural skills of designing quality, applied research from critical and pragmatic perspectives. Focus on quantitative analysis methods, including survey and assessment item development. Students continue deeper review of extant literature for intended dissertation topic. Prereq: RSEM 7001 or permission from the instructor. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7001. Restriction: Restricted to LDRE-EDD students.

RSEM 7003 - Applied Research Methods III (3 Credits)

Content will focus on qualitative data collection and analysis methods, and mixed methods design including program evaluation and improvement research. Students will work with faculty on development of dissertation in practice design. Prereq: RSEM 7002 or permission from the instructor. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7002. Restriction: Restricted to LDRE-EDD students.

RSEM 7010 - Educational Assessment And Measurement (3 Credits)

This advanced course incorporates foundational knowledge and application of assessment and measurement tools in school settings. Foundational concepts are utilized to better understand student achievement and growth indicators, and inferences about school and educator effectiveness; survey measures are also addressed. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7050 - Methods of Survey Research (3 Credits)

Covers the purposes and methods of survey research. Topics included are: goals and uses of survey research, data collection methods, questionnaire and interview protocol design, reliability and validity of data collection methods, sampling, ways to reduce error in data collection and sampling, data analysis techniques commonly used in survey research studies, interpreting and reporting results, and ethical issues. Students design and conduct a survey as part of the course requirements. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7080 - Methods of Qualitative Inquiry (3 Credits)

Prepares graduate students to conduct field research employing qualitative methods and perspectives. Students become familiar with evolving theoretical and methodological perspectives in qualitative research drawn from anthropology, clinical psychology, sociology and education. Students apply techniques of qualitative data collections and analysis in a pilot investigation. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7100 - Advanced Methods of Qualitative Inquiry (3 Credits)

An advanced seminar directed at individuals who have completed an introductory course in methods of qualitative research. Topics included are qualitative data collection, data analysis, and writing about data. Students collect and analyze data. Prereq: RSEM 7080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7080

RSEM 7110 - Intermediate Statistics (3 Credits)

Continuation of RSEM 5100, covering more advanced methods of analyzing data, with an emphasis on the use and interpretation of descriptive and inferential techniques. Topics covered are one-way and two-way analysis of variance; power; multiple comparisons; factorial designs and factorial ANOVA; partial correlation, multiple correlation and regression; analysis of covariance; and selected use of packaged statistical programs (SPSS). Prereq: RSEM 5100. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: RSEM 5100

RSEM 7120 - Advanced Methods in Quantitative Inquiry and Measurement (3 Credits)

Covers advanced topics in quantitative design and analysis, including advanced measurement topics. Topics include: specific types of design used in experimental, quasi-experimental, co-relational, and survey research; multivariate ANOVA, ANCOVA and MRC; factor and trend analyses; classical test theory; and IRT approaches. Students analyze their own data using techniques presented in the course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7130 - Advanced Measurement using Item Response Theory (3 Credits)

This course will consider theory and methods for the educational and psychological measurement of latent variables using item response theory. Students will understand and be able to apply concepts from item response theory, specifically the Rasch model, to understand, evaluate, and construct measures. Recommended students have Introduction to Statistics and a survey design course. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7140 - Management & Secondary Analysis of Large Datasets (3 Credits)
Large education, community, and health datasets are underutilized research resources, providing large samples and longitudinal data otherwise too costly and time-consuming to collect. Students will work in their discipline area to learn to access, manage, and appropriately analyze extant datasets. Prereq: RSEM 7110 Intermediate stats or permission of instructor. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 7110

RSEM 7150 - Mixed Methods Research (3 Credits)
This seminar is directed at individuals who have completed both qualitative and quantitative research courses and are interested in combining these in the mixed-method approach. Focus will be on developing the skills and knowledge needed to formulate mixed-methodological research questions in which quantitative and qualitative data collection, analysis and interpretational techniques are utilized simultaneously or sequentially. Prereq: RSEM 6100 and RSEM 7110. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 6100 and RSEM 7110

RSEM 7200 - Ethnography (3 Credits)
This course is designed for persons interested in studying the phenomenon of learning in family and community contexts. The course blends foundational readings in the learning sciences and the ethnography of education with "participant-observation" fieldwork. The fundamentals of ethics regarding studies involving human persons, building relationships with study participants, becoming an "observant participant," writing field notes, and co-authoring meaning with study participants will be covered. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 7210 - Program Evaluation in Schools (3 Credits)
This advanced course incorporates foundational knowledge and application of the topic of program evaluation as it applies to inquiry and decision making in schools and other educational settings. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 7220 - Program Evaluation Theory and Design (3 Credits)
This course introduces a variety of program evaluation theories, designs, approaches, and tools useful for evaluating a program or policy, including needs assessment, formative and summative evaluations, process evaluation, monitoring outputs and outcomes, impact assessment, and cost analysis. Max hours; 3 Credits.
Grading Basis: Letter Grade

RSEM 7300 - Research Grant Writing (3 Credits)
The purpose of this course is to provide students with a deep understanding of grants and writing grant proposals targeted to major funders' requests for proposals. Students will learn the parts of a grant proposal, writing style difference, budgets, participate in a mock grant reviewer panel, and write a full grant proposal. Max hours: 3 Credits.
Grading Basis: Letter Grade

RSEM 7500 - Special Topics: Research and Evaluation Methods (1-6 Credits)
Specific topics vary from semester to semester. Restriction: Restricted to graduate level students. Repeatable. Max hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Graduate level students

RSEM 7700 - Multi-Level Data Analysis (3 Credits)
Focus is on the analysis of nested data (e.g., students within classrooms and schools, public transportation users within cities) using HLM. Applications include multilevel multiple regression, growth models, and experimental designs. Familiarity with multiple regression and factorial ANOVA is required. Prereq: RSEM 7110 Intermediate Statistics or equivalent. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 7110

RSEM 7800 - Intro to Structural Equation (3 Credits)
This course assumes no prior experience with Structural Equation Modeling, and serves as both theoretical and practical introduction. We will relate SEM to participants' previous knowledge of multiple linear regression, then expand to examine correlated and causally related latent constructs. Prereq: RSEM 7110: Intermediate Statistics or equivalent, or instructor consent. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: RSEM 7110 Restriction: Restricted to Graduate level students

RSEM 7840 - Independent Study: RSEM (1-4 Credits)
Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

RSEM 7900 - Thesis/Dissertation Proposal Writing (3 Credits)
This course is designed to provide you with a structure and support for developing the initial elements of your dissertation or thesis proposal. This course can be considered an 8week intensive writing session providing a framework for completing a solid first draft by week 8. Max hours: 3 Credits.
Grading Basis: Letter Grade

Research and Evaluation Methods, MA

Introduction

Students acquire skills necessary for a variety of roles that involve data-driven decisions. Students are prepared to facilitate decision-making based on evidence. Some students pursue the degree to enhance their skills as classroom teachers. Others work in environments where information and data from different sources are used to make informed decisions.

Program Requirements

Required Courses

Code	Title	Hours
RSEM 5100	Basic Statistics	3
RSEM 5120	Introduction to Research Methods	3
or RSEM 7000	Doctoral Seminar in Research Methods	
RSEM 5110	Introduction to Measurement	3
RSEM 7110	Intermediate Statistics	3
RSEM 7080	Methods of Qualitative Inquiry	3
RSEM 7210	Program Evaluation in Schools	3
Select three of the following:		9
RSEM 6200	Single Case Research Design for Education	
RSEM 7050	Methods of Survey Research	

RSEM 7100	Advanced Methods of Qualitative Inquiry	
RSEM 7120	Advanced Methods in Quantitative Inquiry and Measurement	
RSEM 7150	Mixed Methods Research	
5000+ Level RSEM course with faculty advisor approval		
Select one of the following:		3
RSEM 6950	Master's Thesis	
RSEM 5840	Independent Study: RSEM	
RSEM 5910	Practicum in Research and Evaluation Methodology	
Total Hours		30

Program Requirements and Courses

To complete the REM program and earn a master's degree, students must complete the appropriate course work as outlined in the tables above. All courses require a grade of B- or better to count to the MA and a 3.0 minimum GPA is required for graduation. Students have 7 years in which to complete the degree.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Applied Measurement Certificate

Introduction

Measurement is vital to the social science field as we study people's aptitude, learning/achievement, experiences, personality traits, and states of being. The Measurement certificate will develop your expertise by combining measurement theories, statistical modeling techniques, and observing human behavior. Students learn to use, create, and validate measures through Classical Test Theory and Item Response Theory. Our students work with real data in applied environments with applications in education, policy, counseling, and psychology fields. Students learn to write for publication and to communicate results to practitioners, the direct users of these scales.

Program Delivery

- This is a fully online program.

Program Requirements

Certificate Structure

The certificate consists of four courses, totaling 12 credit hours, and may be earned in one year. Courses may be taken as part of the certificate as well as used toward the Master of Arts in Research and Evaluation Methods (p. 460).

Code	Title	Hours
Required Courses		
RSEM 7110	Intermediate Statistics	3
Select three of the following:		9
RSEM 5110	Introduction to Measurement	
RSEM 7050	Methods of Survey Research	
RSEM 7130	Advanced Measurement using Item Response Theory	

RSEM 7800	Intro to Structural Equation	
RSEM 5840	Independent Study: RSEM or RSEM 7840 Independent Study: RSEM	
Total Hours		12

Applied Statistical Modeling Certificate

Introduction

The Applied Statistical Modeling certificate is an ideal endorsement for those looking to learn advanced modeling skills. These classes will teach you to think and reason with quantitative data, especially using large scale datasets. You will learn to build model to test conceptual frameworks and communicate findings in a manner that is useful to those working in applied/field settings.

Delivery Method

- This certificate is available fully online and in a hybrid format.

Program Requirements

Certificate Structure

The certificate consists of four courses, totaling 12 credit hours, and may be earned in one year. Courses may be taken as part of the certificate as well as used toward the Master of Arts in Research and Evaluation Methods (p. 457).

Code	Title	Hours
Required Courses		
RSEM 7100	Advanced Methods of Qualitative Inquiry	3
RSEM 7800	Intro to Structural Equation	3
Select two of the following:		6
RSEM 7120	Advanced Methods in Quantitative Inquiry and Measurement	
RSEM 7700	Multi-Level Data Analysis	
RSEM 7140	Management & Secondary Analysis of Large Datasets	
RSEM 7130	Advanced Measurement using Item Response Theory	
Total Hours		12

Note: All students are required to meet a prerequisite in introductory statistics (RSEM 5100 Basic Statistics or equivalent) prior to taking courses in the Applied Statistical Modeling Certificate.

Classroom Assessment Certificate

Introduction

The Classroom Assessment Certificate is designed for educators such as teachers, administrators, coaches, program leaders, and curriculum leaders, who desire to learn how to develop, select, use, administer, and interpret educational assessments. The goal of this certificate is for participants to become well-informed assessment designers and developers, critical assessment consumers, assessment evaluators, and advocates of reliable, valid and fair assessments for culturally and linguistically diverse populations. Students will:

- Develop quality assessments, which provide reliable and valid information for making instructional decisions at the classroom and at the school level.
- Become aware of the role of classroom assessment in the context of high-stakes testing and how it can help to maximize student learning and achievement.
- Become critical users of assessment instruments and assessment information.
- Become users, developers, and advocates of assessments, which are fair, reliable, and valid for diverse populations.

Delivery Method

- This is a fully online program.

Program Requirements

Certificate Structure

The certificate is designed as a three-course sequence and one elective course. Each course in the three-course sequence is designed to provide knowledge and skills that are considered building blocks for the next courses. The three courses are designed around four ideas, which are spiraled in the courses and allow participants to achieve the learning goals: assessment development, evaluation of assessments (validity, reliability, and fairness), consumers of assessments (selection of assessments and interpretation of large-scale assessment data), and issues of validity, reliability, bias, and fairness of assessments for diverse populations. The elective course is chosen to complement students' academic and professional goals and interests.

The certificate consists of four courses, totaling 12 credit hours, and may be earned in one year. Courses may be taken as part of the certificate as well as used toward the Master of Arts in Research and Evaluation Methods (p. 457).

Code	Title	Hours
Required Courses		
RSEM 5600	Issues in Assessment Development	3
RSEM 5610	Formative and Summative Assessment in the Classroom	3
RSEM 5620	Analyzing, Using, and Reporting Assessment Results	3
Select one of the following:		3
RSEM 5080	Research In Schools	
RSEM 5100	Basic Statistics	
RSEM 7050	Methods of Survey Research	
RSEM 5840	Independent Study: RSEM	
	or RSEM 7840 Independent Study: RSEM	
Total Hours		12

Program Evaluation Certificate

Introduction

Evaluation specialists are in high demand! The Program Evaluation certificate provides both the theoretical knowledge and real-world experience to make our students well rounded, career-ready evaluators.

In this four-course series, students learn leading theories of program evaluation, explore evaluation design processes, and gain practical experience by developing and conducting at least one evaluation for

a client. Students learn to collaborate with stakeholders to design meaningful evaluations, develop strong quantitative and qualitative analytical skills, examine ethical considerations in evaluation, and construct reports to target multiple program users. Examples and experiences provided are varied within P-12 school settings, non-profit and community settings, large scale policies, and culturally responsive evaluation.

Delivery Method

- This certificate is available fully online and in a hybrid format.

Program Requirements

Certificate Structure

The certificate consists of four courses, totaling 12 credit hours, and may be earned in one year. Courses may be taken as part of the certificate as well as used toward the Master of Arts in Research and Evaluation Methods (p. 457).

Code	Title	Hours
Required Courses		
RSEM 7080	Methods of Qualitative Inquiry	3
RSEM 7110	Intermediate Statistics	3
Select two of the following:		6
RSEM 7500	Special Topics: Research and Evaluation Methods	
RSEM 7210	Program Evaluation in Schools	
RSEM 5840	Independent Study: RSEM	
	or RSEM 7840 Independent Study: RSEM	
Total Hours		12

Responsive Literacy Education

Office: 1380 Lawrence Street Center, 701

Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Overview

The Responsive Literacy Education program provides educators with advanced knowledge and training to work with diverse student populations as they develop reading, writing and oral language skills. Course work includes language and literacy acquisition, culturally relevant teaching practices, literature, literacy assessment and informed instruction, hands-on practica, and other areas.

The MA degree options in Literacy Education will enhance your literacy instruction skills and credentials while providing advanced knowledge and training to work with diverse student populations as they develop reading, writing, and oral language skills. The program requires access to students in order to complete the methods courses. We stress the importance of recognizing a variety of literacies - home, school, community, and mainstream - in both first and second languages, and the meaningful use of literacy and language to improve students' quality of life.

By placing emphasis on the reading, writing, oral and visual language development of culturally, linguistically and academically diverse student populations, this master's program is at the forefront of the field. Language is approached from a socio-psycholinguistic perspective that emphasizes the learner's construction of meaning rather than the

learning of isolated skills. Importance is placed on using theory, inquiry and personal reflection to inform classroom practice. The program prepares teachers to become decision makers capable of developing learner-centered curricula where each student's reading and writing abilities are assessed to address developmental or special needs.

Programs

- Literacy Education, MA (p. 466)
- Literacy Education in English Education, MA (p. 466)
- Literacy Education with Reading Teacher K-12 Endorsement, MA (p. 467)
- Reading Teacher K-12 Endorsement (p. 468)
- Early Literacy Certificate (p. 468)
- Literacy and Language Development for Diverse Learners Certificate (p. 468)

Faculty

Information about faculty in this program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/literacy-education> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/literacy-education/>)

Literacy, Language, & Culturally Responsive Teaching (LCRT)

LCRT 5000 - Elementary Literacy Instruction and Assessment Part 1 (3 Credits)

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6 classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6 Students. Cross-listed with LCRT 4000. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

LCRT 5001 - Elementary Literacy Instruction and Assessment Part 2 (3 Credits)

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6th classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6th Students. Cross-listed with LCRT 4001. Prereq: LCRT 4000 or LCRT 5000. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LCRT 5000 or LCRT 4000. Restriction: TCHR-MA plan or BMA subplan.

LCRT 5020 - Reading Development, Instruction and Assessment (3 Credits)

This course involves critical examination of reading process and instruction. Teachers develop an understanding of the principles of sociopsycholinguistic theory in learning and teaching. Organization options for reading instruction for native and non-native speakers of English at all ages and ability levels will be examined. Teachers become familiar with materials and methods used for reading and reading instruction in schools, including multicultural materials, students' interaction with and response to materials; and techniques to assess and evaluate students reading. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5028 - Developing Strategic Readers, Grades 4-12 (3 Credits)

Focuses on supporting adolescents' developing literacy understandings especially related to vocabulary, reading comprehension, writing, and student engagement across all content areas in the upper elementary grades through high school. Importance is placed on putting new teaching practices in place. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5029 - Developing 21st Century Literacy Curriculum, Gr 4-12 (3 Credits)

Focuses on adolescents' developing literacy understandings across all content areas upper elementary grades through high school. Attention is given to comprehension and critical thinking including assessment, unit planning, problem-based learning, research cycles, technology, and putting new teaching practices into place. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5055 - Literacy Assessment & Informed Instruction (3 Credits)

Focuses on reading, writing, and language assessments and their use to plan and deliver informed classroom and intervention instruction. Principles of literacy assessment, state and federal law, instructional strategies and interventions are learned through creation of student literacy profiles. Needs of both L1 and L2 learners as well as other diverse learners are considered. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5100 - Secondary Literacy Instruction and Assessment (3 Credits)

Provides knowledge and practice in using specific literacy methods to enhance students' content learning and literacy development in middle schools and high schools. Various methods of literacy assessment to guide instruction for students are emphasized. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Cross-listed with LCRT 4100. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

LCRT 5150 - Culturally Relevant & Responsive Pedagogies (3 Credits)

Provides an examination of broad cultural diversity regarding the role of culture in teaching and learning in the classroom. After examining their educational contexts, students gain skills to differentiate instruction for diverse learners; foster quality instruction that demonstrates respect for cultural pluralism; and, create equitable educational environments. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5200 - Theory and Methods of English Education (3 Credits)
Focuses on teaching and learning theories and practical classroom strategies for teaching English Language Arts to students in middle school and high school. Cross-listed with LCRT 4200. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5201 - Adolescent Literature (3 Credits)

Reading and evaluating fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature. Cross-listed with LCRT 4201. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5210 - Literacy Development Pre K-3rd Grade (3 Credits)

Focuses on children's developing literacy understandings and proficiencies beginning in the preschool years. Attention is given to language development, assessment, and instruction in pre-kindergarten through third grade, partnerships with community literacy institutions provide information on their use for literacy development. Cross-listed with LCRT 4210. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5220 - Literacy Routines and Assessment, Pre K-3rd Grade (3 Credits)

This course will focus on the routines and practices which allow for student specific instruction and assessment in the Early Literacy classroom. Participants will examine and critique current literacy routines and assessments needed to best meet the needs of culturally and linguistically diverse children. Cross-listed with LCRT 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5230 - Early Literacy Instruction (3 Credits)

Participants will examine Pre K-3rd grade literacy instruction to understand how to meet the needs of young students. The course will analyze instructional practices for young gifted, special needs and English language learning students to best meet the needs of all learners. Cross-listed with LCRT 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5310 - Literacy Assessment & Processing: Guided Reading (3 Credits)

The course will explore the format and components of Guided Reading Plus, including: responsive teaching, summative and formative assessment, content/language objectives, oral language development, strategies for problem solving, comprehension, fluency, word solving strategies, and the reciprocity of reading and writing. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5320 - Teaching Students with Reading Difficulties (3 Credits)

The course will explore specific teaching moves that help children build an effective literacy processing system and become independent readers. We will study areas of reading difficulty and ways of assessing students to determine their strengths and instructional needs. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5330 - Deepening Literacy Understandings (3 Credits)

This will explore the power of formative assessment for observation and interpretation of reading behaviors. We will study the continuum of literacy learning as a foundation for learning the behaviors and understandings that must be taught at each text level. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5710 - Primary Literacy for Diverse Learners, Pre K-Grade 3 (3 Credits)

This course provides teachers with a basic understanding of reading and writing development in preschool and early primary grades, while considering specific strategies for using and teaching reading and writing in early primary grades (pre-K-3). This course is cross-listed with LCRT 4710. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5720 - Writing Development, Instruction and Assessment (3 Credits)

This course combines examination of current research into effective practices of teaching writing with students' own writing projects. The curriculum serves teachers in all subjects and grades K-12. Readings, groupings, and discussions are differentiated according to specific grade(s) taught. Cross-listed with LCRT 4720. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5724 - Colorado Writing Project I (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5726 - Colorado Writing Project II (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5728 - Colorado Writing Project III (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5730 - Language and Literacy Across the Curriculum (3 Credits)

Explores the value and use of reading and writing as tools for learning across the curriculum on a K-12 basis. Specific needs and strategies for assisting at-risk and second language learners are also discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5750 - Children's Literature in Spanish (3 Credits)

Taught in Spanish, this course presents children's literature from Spanish speaking countries and Spanish speaking authors, along with teaching methodologies and avenues of further research in the field. Prereq: senior-level proficiency in Spanish. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5770 - Effective Literacy Instruction for Diverse Learners (3 Credits)

Focuses on exploring, applying, and evaluating research-based instructional models and learning strategies for teaching literacy to diverse learners. Students develop a professional practice of providing instruction to support oral language, academic reading, and academic writing for native speakers of English, multilingual and bidialectal learners of English. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5780 - Connecting Cultures Through Literature (3 Credits)

This course looks at the issue of multicultural literacy for K-8th grade and how children's and young adult literature can be used to create a high quality multicultural curriculum which enhances literacy development and covers all the content areas. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5790 - Children's Literature: Grimm through Graphic Novels (3 Credits)

Children's literature course exploring the historical development of children's literature and its influence on contemporary literature and media. Emphasized are various genre including both fiction and nonfiction, choosing and critiquing children's literature, and children's book awards. Graphic novels and e-books are explored as the leading edge of this area. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5795 - Current Children's Literature (3 Credits)

This course explores children's literature, including electronic books, within the past decade. A wide range of genres will be explored with a particular emphasis on newer authors and illustrators in the field. Participants will also practice critiquing children's literature and selecting books for instruction. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5810 - Oral & Written Language & Literacy (3 Credits)

Focuses on oral/written language and literacy in educational and home settings. Addresses learners with native English, English as additional language, bi-dialectal, and multilingual. Students analyze language and literacy samples using language structures and discourse patterns to develop instructional techniques. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5815 - Family Literacies in Diverse Communities (3 Credits)

Focuses on involving and connecting with families and communities of classroom learners. Students gain practical strategies to identify resources and funds of knowledge that diverse learners and families bring to schools; and, use learners' cultural resources and references to promote all aspects of learning in the classroom. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5831 - Reading Recovery: Observation Survey (2 Credits)

A workshop class which introduces the participants to an understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Prereq: reading and language arts methods. A minimum of three years primary teaching or reading teaching experience. Max hours: 2 Credits.

Grading Basis: Letter Grade

LCRT 5835 - Special Topics: Literacy and Language (0.5-3 Credits)

Specific topics vary but will include the exploration of literacy development and instruction in particular populations or with specific focuses. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 5840 - Independent Study: LCRT (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 5911 - Reading Recovery Practicum: Early Intervention (Theory, Procedures and Practice) (3 Credits)

A field experience which extends the participants' understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6840 - Independent Study: LCRT (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 6910 - Seminar & Practicum in Literacy and Language (3 Credits)

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experiences, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and to reflect upon their roles as change agents in the field. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6911 - Seminar and Practicum in Literacy and Language, 7-12+ (3 Credits)

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experience, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and reflect upon their own roles as change agents in the field. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6913 - Reading Recovery: Practicum (4 Credits)

A practicum which refines the participants' understanding of literacy acquisition and finalizes preparation to implement the Reading Recovery Program within their school/district. Max hours: 4 Credits.

Grading Basis: Letter Grade

LCRT 6915 - Seminar and Practicum in Literacy Professional Development (3 Credits)

This final practicum is designed for teachers to enhance their education as reading professionals in two ways. First, by continuing to reflect on and analyze their own and others' teaching, participants will deepen their understanding of how to assess and design instruction based on the needs of students. Second, through structured coaching activities, participants will improve their skills in providing literacy leadership. Max hours: 3 Credits. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6950 - Master's Thesis (4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Literacy Education, MA

Introduction

Prepares educators to work with diverse K - 12 students to develop reading, writing, and oral language skills. Graduates gain in-depth knowledge about building on students' languages, abilities, cultures, and real-world experiences to design highly effective and relevant teaching practices.

Program Requirements

This degree plan does not include a license or an endorsement.

Code	Title	Hours
Literacy Core Courses		
LCRT 5720	Writing Development, Instruction and Assessment	3
LCRT 5020	Reading Development, Instruction and Assessment	3
LCRT 5055	Literacy Assessment & Informed Instruction	3
Thematic Course Categories		
In consultation with your faculty advisor, select 5 courses from the Thematic Course Categories to customize your learning: https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Course 1		3
Course 2		3
Course 3		3
Course 4		3
Course 5		3
Concentration Research Courses		
Select one of the following:		3
RSEM 5050	Classroom Assessment	
RSEM 5080	Research In Schools	
Other RSEM courses with Advisor Approval		
Concentration Capstone Course		
LCRT 6915	Seminar and Practicum in Literacy Professional Development	3
Total Hours		30

Cumulative Portfolio

The MA portfolio counts as the comprehensive exam for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

Program Requirements and Courses

To complete the Literacy Education program and earn a master's degree and/or endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better to count to the MA or endorsement and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer

semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Literacy Education in English Education, MA

Introduction

This MA degree prepares licensed Secondary English or Secondary language arts teachers to work with diverse adolescents as they develop an appreciation for literature and composition. Course work includes theory and methods of English education, linking assessment and instruction, and practicum experience. The study of contemporary, ethnic, and classic literature, reading, and writing are woven together, along with speaking, listening, and viewing.

Program Requirements

This degree plan does NOT include a license or an endorsement.

Code	Title	Hours
Concentration Courses		
LCRT 5200	Theory and Methods of English Education	3
LCRT 5201	Adolescent Literature	3
LCRT 5720	Writing Development, Instruction and Assessment	3
English and Thematic Courses		
ENGL ____	Literature, Writing, Film, or Language Study	3
ENGL ____	Literature, Writing, Film, or Language Study	3
ENGL ____	Literature, Writing, Film, or Language Study or Choice Course from SEHD Thematic Course Categories with Advisor Approval	3
____	Choice Course from SEHD Thematic Course Categories with Advisor Approval	3
____	Choice Course from SEHD Thematic Course Categories with Advisor Approval	3

<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories> (<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/>)

Research		
Select one of the following:		3
RSEM 5050	Classroom Assessment	
RSEM 5080	Research In Schools	
other RSEM course with Advisor Approval		

Capstone

LCRT 6915	Seminar and Practicum in Literacy Professional Development	3
Total Hours		30

Cumulative Portfolio

The MA portfolio fulfills the comprehensive exam requirement for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

Program Requirements and Courses

To complete the Literacy Education program and earn a master's degree, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Literacy Education with Reading Teacher K-12 Endorsement, MA

Introduction

This MA with endorsement is designed for K-6 and 7-12 teachers and meets the Colorado Department of Education requirements to add the Reading Teacher endorsement to a current Colorado teaching license. Recommendations for endorsements are made by the program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co>) or another state in which they wish to be endorsed for the most updated endorsement requirements. Please note that the Colorado Department of Education also requires 2 years of post-licensing teaching experience to apply for the reading teacher endorsement after graduation.

Program Delivery

- This degree is available on-campus or completely online.

Program Requirements

Code	Title	Hours
Literacy Core Courses		
LCRT 5810	Oral & Written Language & Literacy	3
LCRT 5020	Reading Development, Instruction and Assessment	3
LCRT 5055	Literacy Assessment & Informed Instruction	3
Content Courses		
LCRT 6910	Seminar & Practicum in Literacy and Language	3
LCRT 5710	Primary Literacy for Diverse Learners, Pre K-Grade 3	3
	or LCRT 5730 Language and Literacy Across the Curriculum	
LCRT 5720	Writing Development, Instruction and Assessment	3
LCRT 5795	Current Children's Literature ¹	3
	or LCRT 5201 Adolescent Literature	
Choice from SEHD Thematic Course Categories list with Faculty Advisor Approval		3
https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Research Course		
Select one of the following:		3
RSEM 5050	Classroom Assessment	
RSEM 5080	Research In Schools	
other RSEM course with Advisor Approval		
Capstone		
LCRT 6915	Seminar and Practicum in Literacy Professional Development (Comprehensive Exam)	3
Total Hours		30

¹ Or LCRT 5780 Connecting Cultures Through Literature, or LCRT 5790 Children's Literature: Grimm through Graphic Novels are offered occasionally

Cumulative Portfolio

The MA portfolio fulfills the comprehensive exam requirement for the master's degree. The portfolio is an accumulation of the performance based assessments completed during program courses and reflects on the student's development over the course of the degree program.

Program Requirements and Courses

To complete the Literacy Education program and earn a master's degree and endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Reading Teacher K-12 Endorsement Introduction

Recommendations for endorsements are made by the C&I Program, but endorsement is granted by the State of Colorado. Individual state requirements vary and may include teaching experience and examinations in addition to a valid teaching credential. Students should consult with the Colorado Department of Education (<http://www.cde.state.co>) or another state in which they wish to be licensed for the most updated endorsement requirements. Please note that the Colorado Department of Education also requires 2 years of post-licensing teaching experience to apply for the reading teacher endorsement after completion.

Program Requirements

Code	Title	Hours
Required Courses		
LCRT 5810	Oral & Written Language & Literacy	3
LCRT 5020	Reading Development, Instruction and Assessment	3
LCRT 5055	Literacy Assessment & Informed Instruction	3
LCRT 6910	Seminar & Practicum in Literacy and Language	3
LCRT 5710	Primary Literacy for Diverse Learners, Pre K-Grade 3	3
or LCRT 5730	Language and Literacy Across the Curriculum	
LCRT 5720	Writing Development, Instruction and Assessment	3
LCRT 5795	Current Children's Literature ¹	3
or LCRT 5201	Adolescent Literature	
LCRT 6915	Seminar and Practicum in Literacy Professional Development	3
Total Hours		24

¹ LCRT 5780 Connecting Cultures Through Literature, LCRT 5790 Children's Literature: Grimm through Graphic Novels offered occasionally

Early Literacy Certificate Introduction

This online certificate offers primary grade teachers, preschool teachers and para-educators greater background in the development, assessment and instruction of literacy for young children, native speakers of English and English language learners. Administrators and intermediate-grade teachers have also found this program to be a great way to solidify their

understandings of initial literacy development to help them best meet the needs of struggling learners in the upper grades.

Certificate Structure

This certificate totals 9 credit hours in the specialty area of early literacy. All courses are three graduate credit hours and may be applied directly toward a full master's degree in Literacy while also fulfilling the requirements toward a Colorado Reading Teacher Endorsement. Additional courses and applications are required for the master's degree and/or endorsement. Courses may be taken in any order and the certificate may be completed in one year.

Code	Title	Hours
LCRT 5210	Literacy Development Pre K-3rd Grade	3
LCRT 5220	Literacy Routines and Assessment, Pre K-3rd Grade	3
LCRT 5230	Early Literacy Instruction	3
Total Hours		9

Literacy and Language Development for Diverse Learners Certificate Introduction

This online graduate certificate program offers K-12 teachers greater background in the development, assessment and instruction of literacy for diverse learners, including children and youth who speak dialects of English or are English language learners. This certificate was developed in response to public school districts' need to improve reading and writing achievement for diverse students. Teachers in K-12 grades, including content area teachers and those teaching special reading classes, as well as administrators have also found this program to help them best meet the needs of struggling learners.

Certificate Structure

The fully online certificate totals 12 credit hours and consists of four graduate courses. All courses may be applied directly toward a full master's degree in Literacy while also fulfilling the requirements toward a Colorado Reading Teacher Endorsement. Additional courses and applications are required for the master's degree and/or endorsement. The certificate may be completed in four semesters. Students can begin in any term.

Code	Title	Hours
LCRT 5810	Oral & Written Language & Literacy	3
LCRT 5770	Effective Literacy Instruction for Diverse Learners	3
LCRT 5055	Literacy Assessment & Informed Instruction	3
LCRT 5150	Culturally Relevant & Responsive Pedagogies	3
Total Hours		12

School Psychology

Program Leader: Bryn Harris, PhD
Office: Lawrence Street Center, 1114
Phone: 303-315-6315
Email: bryn.harris@ucdenver.edu

Website: <https://education.ucdenver.edu/academics/doctoral/detail/School-Psychology-PsyD> (<https://education.ucdenver.edu/academics/doctoral/detail/School-Psychology-PsyD/>)

Overview

The doctor of psychology (PsyD) degree in school psychology is a 100 graduate semester-hour program that leads to eligibility for licensure as a school psychologist by the Colorado Department of Education and licensure as a psychologist by the Colorado State Board of Psychologist Examiners.

The PsyD program at CU Denver is currently Accredited, on Contingency by the American Psychological Association (see the APA Accreditation website (<https://accreditation.apa.org/about-coa/>) for further details). The program is also approved by the National Association of School Psychologists (NASP). The PsyD training program aligns with accreditation standards and the following domains of psychology: affective, biological, cognitive, and developmental aspects of behavior; data-based decision-making and accountability; consultation and collaboration; interventions and mental health services to develop social and life skills; school-wide practices to promote learning; preventative and responses services; family-school collaboration services; diversity in development and learning; research and program evaluation; and legal, ethical and professional practice.

Consistent with a practitioner-scholar model, the PsyD Program in School Psychology prepares professional school psychologists through rigorous academic study integrated with intensive supervised clinical practice. The program includes an emphasis on the delivery of culturally-responsive mental health services in schools, as well as the development of advanced level practice skills. The Program stresses the application of scholarly findings to practice, as well as a respect for all aspects of diversity. Graduates of this program are license eligible for independent practice in schools, hospitals, child agencies and clinics, and other settings.

Bilingual School Psychologist Concentration Option

This optional specialization provides School Psychology students with the knowledge and skills to effectively serve bilingual learners in the school setting. In addition to the three required courses and practicum component, the Bilingual School Psychologist concentration consists of language proficiency assessments to ensure that school psychologists are adequately proficient in another language to provide psychoeducational services. CU Denver provides one of the few bilingual school psychology concentration areas in the country making our graduates even more desirable in their future endeavors.

School of Psychology Admission Requirements

Successful applicants to the school psychology (SPSY) program will have obtained a minimum 3.2 undergraduate GPA and a combined score of at least 300 on the verbal and quantitative sections of the Graduate Record Exam (GRE) and a minimum score of a 3.5 on the written portion of the GRE. Applicants will also submit a current resume or vita, a personal statement that outlines their reasons for pursuing a degree in school psychology at CU Denver, and three letters of recommendation. The highest ranked applicants will be invited to a full-day group interview that includes a program orientation, a writing assignment, and a campus tour.

- Application materials are available at: <http://www.ucdenver.edu/admissions/Pages/index.aspx> (<http://www.ucdenver.edu/admissions/Pages/>). All materials must be submitted online by December 1 for fall semester admissions. Application materials include the following:
- \$50 application fee for domestic students, \$75 application fee for international students (may be paid via credit card, e-check or by mailing in a check)
- letter of intent/personal statement
- resume or vita
- three letters of recommendation
- one official transcript from each higher education institution attended (in the original, sealed envelope)
- official GRE scores sent directly to the University of Colorado Denver. The GRE is a general scholastic aptitude test that yields separate verbal and quantitative scores. A minimum score of 300 (verbal score + quantitative score) with an approximate score of 3.5 on the written portion is required for consideration as an applicant. When taking the GRE use the code number for CU Denver, 4875, to ensure scores will be sent electronically to CU Denver. GRE scores are required for the School Psychology program unless you already hold a Doctoral Degree.

Programs

- School Psychology, PsyD (p. 472)

Faculty

Information about faculty in the school psychology program is available online at: <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/school-psychology> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/school-psychology/>)

School Psychology (SPSY) Courses

SPSY 5010 - Introduction to Counseling in School Psychology (3 Credits)

Provides an overview of the counseling theories relevant to the practice of school psychology and an understanding of the role of theory in practice. Includes consideration of legal/ethical issues and both the cultural and developmental context of the major theories. Max Hours: 3 Credits.

Grading Basis: Letter Grade

SPSY 5100 - Introduction to the Neurosequential Model in Education (3 Credits)

Introduction to the core concepts of the Neurosequential Model® (NM) that impact learning. Core concepts include basics of brain organization, brain development, understanding state-dependent learning, the stress response systems, and the impact of trauma and neglect on children.

Max hours: 3 Credits.

Grading Basis: Letter Grade

SPSY 5200 - Application of Neurosequential Model in Education (3 Credits)

Focuses on helping educators and other school personnel better understand and teach challenging children by offering practical strategies and classroom practices related to structuring classroom schedules, activities and interactions that can help all children (not just children impacted by trauma and adversity) learn in an optimal way.

Prereq: SPSY 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5100.

SPSY 5600 - Behavior Analysis and Intervention (3 Credits)

This course introduces knowledge and skills necessary for school psychologists to proactively address child problem behaviors. Content includes application of Positive Behavioral Support (PBS), functional behavior analysis and intervention, evaluation of behavior change.

Relevant federal, state regulations are also addressed. Restriction:

Restricted to SPSY majors within the School of Education and Human Development or consent of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 5800 - Workshop: Topics in School Psychology (1-6 Credits)

Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

SPSY 5840 - Independent Study: SPSY (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPSY 5900 - School-Based Multicultural Interventions (3 Credits)

The course will foster students' understanding and appreciation of diversity and its applications for school psychology practice, educational contexts, and mental health policy. Students will learn to evaluate and implement school-based mental health and educational interventions with a multicultural lens. Prereq: SPSY 6100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: SPSY 6100

SPSY 6100 - School Psychology: Professional and Legal Foundations (3 Credits)

This course covers topics related to the practice of school psychology, both past and present, including legal/ethical obligations/issues, accreditation, certification/licensure, culturally competent practice, roles/responsibilities, and evaluation and accountability. Observation in schools and related settings is required. Prereq: Admission to School Psychology Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6150 - Psychoeducational Assessment I (3 Credits)

Focuses on assessment of cognitive ability, cognitive processes, and achievement in children and adolescents. Topics include selection, administration, and interpretation of ability and achievement tests; psychological report writing, and psychometric, historical, theoretical, and cultural issues in assessment. Test administration required. Restriction: SPSY PsyD: Restricted to SPSY PsyD majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6160 - Psychoeducational Assessment II (3 Credits)

Focuses on the assessment of adaptive behavior, personality, and social-emotional functioning in children and adolescents. Topics include selection, administration, and interpretation of these types of measures; cultural considerations in psychological assessment, psychological report writing, and developing interventions. Test administration required. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6170 - Applied Developmental Science and Assessment (3 Credits)

Examines theories and research in developmental psychology to provide a foundation for clinical services to children and families in applied settings. Includes coverage of developmental assessments and services for infants/toddlers. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6350 - School-Based Interventions: Children, Youth and Families (3 Credits)

Provides theoretical and practice-oriented introduction to child therapy in schools. Weaves together skills and techniques essential to theory and implementation of psychotherapeutic techniques. Course activities compliment the systemic and group-based interventions examined in SPSY 6400. Prereq: SPSY 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5010.

SPSY 6400 - School-Based Interventions: Groups, Classrooms and Systems (3 Credits)

Provides students with advanced study of research on and techniques of classroom and small group interventions. Includes instruction on the evaluation of intervention effectiveness. Systemic, school-wide interventions are addressed. Prereq: SPSY 5010. Restriction: Restricted to SPSY majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5010. Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6410 - Psychoeducational Assessment of Culturally and Linguistically Diverse Students (3 Credits)

Prepares students to provide psychoeducational assessments to children who are culturally and/or linguistically diverse. Content includes differentiation of language disorders versus language acquisition, and developing recommendations for accommodations and interventions to meet the unique psychoeducational needs of diverse children and youth. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6420 - Crisis Prevention, Planning and Intervention (3 Credits)

Introduces students to crisis theory, prevention research, and intervention strategies. The course is designed for school mental health professionals interested in developing advanced crisis counseling and intervention skills sufficient for use in school settings. The course emphasizes the importance of practical hands-on opportunities for skills development.

Prereq: COUN 5010 or SPSY 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 or SPSY 5010

SPSY 6450 - School-Based Consultation for Mental Health Professionals (3 Credits)

A wide range of traditional or emerging consultation models emphasizing practical application of empirically-based approaches to advance the social or academic competence of students, classrooms, schools and districts. Hands-on experience supplement course content as students develop, refine, and practice their own eclectic consultation approach.

Prereq: SPSY 6100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6100

SPSY 6500 - Affective Bases of Behavior and Psychopathology (3 Credits)

This course provides students with advanced concentrated study of the affective bases of behavior, including affect, mood, and emotion. This course also includes coverage of psychopathology and the diagnosis of mental disorders. Restriction: Restricted to SPSY majors within the School of Education and Human Development or consent of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6550 - Academic Interventions in School Psychology (3 Credits)

Provides training in knowledge and skills for the use of educational intervention practices in school psychology, including the development, implementation, and evaluation of academic interventions in the areas of reading, math, and written language; curriculum based measurement and progress monitoring. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6700 - Advanced Seminar in School Psychology (3 Credits)

This course covers advanced topics related to the practice of school psychology including applying and interviewing for internship, certification/ licensure, capstone preparation and completion, and the development of a professional identity. Prereq: SPSY 6911. Restriction: Restricted to School Psychology majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6911 Restriction: Restricted to SPSY majors

SPSY 6911 - School Psychology Practicum (3 Credits)

Supervised practice in providing comprehensive psychological services to children in grades preschool to 12. Students are placed in public schools or affiliated school-related agencies and supervised by practicing, licensed school psychologists. Prereq: SPSY 5600, SPSY 6100, SPSY 6150, SPSY 6160 or consent of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 5600, SPSY 6100, SPSY 6150, and SPSY 6160

SPSY 6915 - Practicum with Culturally and Linguistically Diverse Students (3 Credits)

This school psychology practicum experience is focused on developing multicultural competencies with culturally and linguistically diverse students through either a cultural immersion experience in Mexico or a local practicum placement in a culturally and linguistically diverse setting. Prereq: SPSY 6100 and SPSY 6150 and consent of the instructor.

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Prereq: SPSY 6100 and SPSY 6150.

SPSY 6917 - Advanced Practicum in Psychological Assessment (1 Credit)

Under faculty supervision provide psychological assessment services to clients in the UC Denver Student and Community Counseling Center.

Prereq: SPSY 6150, SPSY 6160, and consent of the instructor. Max hours: 1 Credit.

Grading Basis: Letter Grade

Repeatable. Max Credits: 1.

SPSY 6918 - Clinical Externship (1-3 Credits)

Clinical experience under supervision of licensed mental health professionals. Students participate in assessment and/or intervention in a variety of settings. Note: All field placements must be approved by the SPSY Program Director in advance of registration. Prereq: SPSY 6911.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 6911

SPSY 6930 - School Psychology Internship (1-6 Credits)

Supervised experience in the practice of school psychology with children and adolescents in a school or clinic setting. Prereq: SPSY 5900, SPSY 6100, SPSY 6410, SPSY 6911, SPSY 6350, SPSY 6400, SPSY 6450, SPSY 6500, or instructor consent. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 5900, SPSY 6100, SPSY 6410, SPSY 6911, SPSY 6350, SPSY 6400, SPSY 6450, and SPSY 6500

SPSY 7500 - Biological and Neuropsychological Bases of Behavior (3 Credits)

Examines the biological basis of behavior emphasizing the relationship between the functions and structures of the brain including neuroanatomy, brain development, neurophysiology, neurochemistry, and psychopharmacology; and neuropsychological assessment principles.

Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 7980 - Clinical Supervision & Admin of Psych Services (3 Credits)

Course prepares school psychologists to function in supervisory and administrative capacities in delivering mental health services. Content includes examination of clinical supervision theories, models, techniques; focus on development of skills for administrative roles, and understanding organizations from a systems perspective. Prereq: SPSY 6918. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6918 Restriction: Restricted to SPSY PsyD majors within the School of Education and Human Development

SPSY 8980 - School Psychology Doctoral Capstone Project (2 Credits)
The Capstone Project is a culminating component of the program. Production of a scholarly project that illustrates the student's understanding of relevant topics in school psychology, the scope of contemporary practice, and the various roles of the professional school psychologist. Prereq: SPSY 6911 and SPSY 6700. Restriction: Restricted to SPSY-PSYD majors within the School of Education and Human Development or consent of the instructor. Max hours: 2 Credits.
Grading Basis: Letter Grade with IP
Prereq: SPSY 6911 and SPSY 6700. Restriction: Restricted to SPSY-PSYD majors within the School of Education and Human Development.

School Psychology, PsyD

Introduction

The School Psychology Doctor of Psychology (PsyD) program offers comprehensive, supervised training and a strong foundation in school psychological theory and clinical practices that are evidence-based, culturally responsive, socially just and collaborative. The foundational mission of the program is to train culturally and linguistically responsive school psychologists. All of the courses revolve around themes of equity and social justice. We meet the highest standards in the profession. This program is one of only 14 School Psychology PsyD programs in the country to receive APA accreditation. It is one of only a handful of APA-accredited programs in the country that offers an optional bilingual school psychologist concentration.

Graduates earn a Doctor of Psychology (PsyD) degree and are eligible for licensure in School Psychology by the Colorado Department of Education. Graduates also have the option of pursuing licensure by the State Board of Psychologist Examiners. School psychologists work in public and nonpublic school systems, hospital and medical pediatric clinics, community mental health centers, and public policy, public education and health agencies.

Requirements for the Doctor of Psychology Degree in School Psychology and Licensure

Students will complete course work in affective, biological, cognitive, socio-cultural, and developmental aspects of behavior; legal and professional issues; psychological assessment; crisis intervention; counseling and other direct interventions; and consultation. Specific course requirements include two prerequisite courses, 75 credit hours of coursework, 7 credit hours of practica (minimum of 600 hours in the field), 6 credit hours of clinical externship (minimum of 500 clock hours in the field), 8 credit hours of internship (minimum of 1500 clock hours in the field), and 4 Capstone project credit hours. Successful completion of the School Psychology Praxis exam during the course of study and passing of comprehensive examinations are also required. Prerequisites include an undergraduate or graduate course in both of the following: measurement concepts and child development. Students may be admitted to the program without first completing these prerequisites; however, these courses must be completed during the first year of study.

Code	Title	Hours
Core Course Work		
RSEM 5100	Basic Statistics	3
SPSY 5010	Introduction to Counseling in School Psychology	3

LDFS 6320	Mind, Brain, and Education	3
SPSY 7500	Biological and Neuropsychological Bases of Behavior	3
PSYC 7511	Historical and Philosophical Foundations of Psychology	3
PSYC 8550	Advanced Social Psychology	3
RSEM 7080	Methods of Qualitative Inquiry	3
RSEM 7050	Methods of Survey Research	3
RSEM 7110	Intermediate Statistics	3
RSEM 7210	Program Evaluation in Schools	3
SPSY 5600	Behavior Analysis and Intervention	3
SPSY 5900	School-Based Multicultural Interventions	3
SPSY 6100	School Psychology: Professional and Legal Foundations	3
SPSY 6150	Psychoeducational Assessment I	3
SPSY 6160	Psychoeducational Assessment II	3
SPSY 6170	Applied Developmental Science and Assessment	3
SPSY 6350	School-Based Interventions: Children, Youth and Families	3
SPSY 6400	School-Based Interventions: Groups, Classrooms and Systems	3
SPSY 6410	Psychoeducational Assessment of Culturally and Linguistically Diverse Students	3
SPSY 6420	Crisis Prevention, Planning and Intervention	3
SPSY 6450	School-Based Consultation for Mental Health Professionals	3
SPSY 6500	Affective Bases of Behavior and Psychopathology	3
SPSY 6550	Academic Interventions in School Psychology	3
SPSY 6700	Advanced Seminar in School Psychology	3
SPSY 7980	Clinical Supervision & Admin of Psych Services	3

Supervised Experiences

SPSY 6911	School Psychology Practicum	3
SPSY 6917	Advanced Practicum in Psychological Assessment	1
SPSY 6918	Clinical Externship	1-3
SPSY 6930	School Psychology Internship	1-6

Doctoral Research/Capstone

SPSY 8980	School Psychology Doctoral Capstone Project	2

Total: 100 Hours

The doctor of psychology in school psychology degree also requires a passing score (≥ 147) on the PRAXIS exam in school psychology (Test Code 5402), a passing score on a written comprehensive examination, satisfactory completion of two comprehensive case studies, and completion of a Capstone/applied research project.

Professional Expectations

All students in the SPSY program are expected to show a strong commitment to the program and to maintain a high academic, professional, ethical standards and sensitivity to diversity. Inappropriate or unprofessional conduct is cause for discipline or dismissal from the program.

Special Education

Office: 1380 Lawrence Street Center, 701
Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Website: www.ucdenver.edu/education (<http://www.ucdenver.edu/education/>)

Overview

The Special Education (SPED) program emphasizes the development of reflective practitioners through trans-disciplinary training, fosters reflective inquiry about teaching and learning, as well as the development of the skills, knowledge, and dispositions necessary to teach in elementary and secondary classrooms serving students with disAbilities.

Reflection and inquiry provide an informed and integrated basis for advocating for all learners.

The Master of Arts (MA) in Special Education offers two degree paths:

1. MA in Special Education (Personalized Professional): The customizable 30 credit hour MA path provides the opportunity for you to tailor your coursework to your specific needs as an educator. Students have the flexibility to choose courses from across all SEHD programs for additional learning from the from the Thematic Course Categories list to allow for a more in-depth approach to the field. The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning. **This MA does NOT lead to a license or an endorsement.**
2. MA plus endorsement: The MA plus endorsement allows students to complete an MA, and add a SPED Generalist Ages 5-21 endorsement to their current teaching license. Recommendation for endorsement is made by the SPED Program, but endorsement is granted by the State of Colorado. Individual State requirements vary and may include teaching experience and in addition to a valid teaching credential. Students should consult with the Colorado Department of Education or the state in which they wish to be endorsed for the most updated endorsement requirements.

The time needed to complete the various special education program options varies based on previous experience, coursework, and needs of students. In addition to traditional on-campus offerings, a wide selection of courses are available in remote and online formats. During the academic year, core special education courses are typically scheduled in late afternoons and evenings to avoid conflict with teaching responsibilities. Course formats and offerings are subject to change.

If you are **not** a teacher and are seeking an initial teaching license in Special Education, please see our Master of Arts in Teaching (p. 485) program.

If you are interested in the Early Childhood Special Education Specialist (Birth-8 years) endorsement, please see the Early Childhood Special Education Specialist Endorsement (p. 440) program.

Programs

- Special Education, MA (p. 475)
- Special Education with Applied Behavior Analysis Emphasis, MA (p. 476)
- Special Education with Special Education Generalist (Ages 5-21) Endorsement, MA (p. 477)
- Special Education Generalist Endorsement Only (p. 477)

Faculty

Information about faculty in the Special Education program is available online at <https://education.ucdenver.edu/about-us/faculty-directory/>

[in-category/categories/sehd/program-areas/special-education \(https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/special-education/\)](https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/special-education/).

Special Education (SPED) Courses

SPED 5000 - Universal Design for Learning (UDL) (3 Credits)

This course introduces Universal Design for Learning (UDL), an important educational philosophy and set of principles & techniques that focuses on strategies and tools to help ALL students by accommodating their differences in inclusive classroom settings. Cross-listed with SPED 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5010 - Intentional Interventions for Exceptional Learners (3 Credits)

This course provides instructional strategies and interventions for students with a wide variety of disabilities. Implications for targeted and intensive interventions and assessment are considered. Cross-listed with SPED 4010. Max hours: 3 Credits

Grading Basis: Letter Grade

SPED 5030 - Understanding (dis)Ability in Contemporary Classrooms (3 Credits)

This course provides an overview of special education by examining the history of special education, construction of dis/ability, characteristics of individuals with disabilities, aspects of disproportionality, and introduction to evidence-based instructional practices. Cross-listed with SPED 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5050 - Assessment & Advocacy for Multilingual Learners (3 Credits)

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students. Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with CLDE 5050. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5120 - Negotiating The Special Education Teaching Process (3 Credits)

This course explores both theoretical and practical aspects of educating students with special needs. Students will examine the nature of disability, the history and legal basis for special education programming in American schools, as well as contemporary law governing the education of persons with disabilities. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5140 - Assessment: Inquiry, Instruction, & Intervention (3 Credits)

Using a variety of assessment tools, students will focus on the educational assessment methods and procedures used in decision making and program planning for students with exceptional learning needs, with attention to pervasive issues pertaining to students from culturally and linguistically diverse backgrounds. Cross-listed with SPED 4140. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors (3 Credits)

This course works to transform perspectives and practices related to supporting student behavior in classrooms. Students will learn important considerations related to culture, race, gender and socioeconomic status, as they intersect with behavior and social emotional development. Cross-listed with SPED 4151. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5210 - Foundations for Understanding Behavior (3 Credits)

This course is designed to provide a foundational understanding of behaviors commonly witnessed in the classroom. It will provide strategies for assessment and guidance on legal processes which guide the development of individualized education and behavior plans. Specialize instructional methods and current events impacting the social emotional educations of students will also be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5300 - Family, Professional, and Community Collaboration (3 Credits)

Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance a teacher's ability to work and communicate effectively with school personnel, including paraprofessionals and parents. The goal of collaboration is to support and determine together the instructional scenarios that best meet the needs of students. Specific competencies include problem solving, conflict resolution, data collection or observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Cross-listed with SPED 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5401 - Advanced Seminar in Special Education (3 Credits)

Designed to allow an opportunity for special educators to compare and contrast the service delivery, funding mechanisms, professional ethics, and underlying assumptions of special and regular education. Trends in the field of special education are examined through review of current research. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5440 - Ethics and Implementation ABA (3 Credits)

This course is designed to teach you ethical and professional conduct considerations in applied behavior analysis. We will review behavior change systems and implementation issues in the conduct of applied behavior analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5450 - Introduction to ABA and Terminology (3 Credits)

This course will introduce the history and basics of ABA with a focus on its related terminology. In addition, ABA benefits will be discussed, and emphasis placed on ethical considerations required for practicing ABA as a board Certified Behavior Analyst. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5460 - ABA Practical Applications (3 Credits)

This course will provide a framework for the natural science of behavior. It will provide students with a systematic approach to understanding and precisely describing the behavior of individuals, and its relationship to environmental determinants. Prereq: SPED 5450. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5470 - ABA Data (3 Credits)

This course will introduce how to collect and interpret different types of data, and the importance of making data-driven decisions for behavior change procedures based on functional relationships. Prereq: SPED 5450, 5460. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5480 - ABA Advanced Data and Behavioral Plans and Applications (3 Credits)

Student will learn to use standard celeration charts and make data-driven decisions to write appropriate behavioral plans. They will also learn to use ABA strategies to enhance communication, to support individuals with ASD, and to benefit from systems supports. Prereq: SPED 5450, 5460, 5470. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5490 - Autism In Early Intervention (3 Credits)

This course will provide students with the knowledge necessary to implement recommended, evidence-based practices with young children with autism. The course will provide information on the etiology of autism, diagnostic procedures, evidence-based practices, and how to support families who have a young child diagnosed on the spectrum. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5495 - Advanced Topics in Applied Behavior Analysis (3 Credits)

Students will learn how to apply basic behavioral principles to either novel client populations or using nuanced behavioral theories, like behavioral momentum theory or behavior economics. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5500 - Transition and Secondary Methods in Special Education (3 Credits)

This course provides school leaders and practitioner with an understanding of the special education transition process as specified by federal and state guidelines, as well as effective teaching and learning strategies for secondary youth with disabilities. Cross-listed with SPED 4500. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5530 - Language & Literacy Acquisition Div Lrn (3 Credits)

This course investigates the relationship between language and literacy acquisition. In the context of first and second language acquisition across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5600 - Special Education Law: Ethics and Compliance (3 Credits)

Designed for school leaders and professionals to understand special education law and compare and contrast service delivery options. Cross-listed with SPED 4600. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5740 - Intersections of Literacy, Culture, & Exceptionality (3 Credits)

This course provides a foundational understanding of the complex intersections between literacy, culture, language, learning, and students with (dis)abilities. A primary goal is to address the particular needs of culturally and linguistically diverse learners with exceptionalities, while also exploring the distinctions between language development and learning disabilities. Cross-listed with SPED 4740. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5780 - Literacy Intervention for Exceptional Learners (3 Credits)
Provides the practitioner with an understanding of research-validated approaches, strategies, assessment tools and issues related to effective literacy instruction for students performing significantly below grade level. Practitioners can expect to be able to conduct thorough literacy assessments as well as be able to develop, implement, and evaluate individual reading and writing programs for individual students with the most challenging literacy needs. Cross-listed with SPED 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5835 - Special Topics (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5840 - Independent Study: SPED (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SPED 5918 - ABA Practicum (1 Credit)

The purpose of this practicum is to provide additional learning opportunities in the areas of working directly with clients / consumers, implementing evidence-based treatments to address behaviors of social significance, implementing treatment plans, and monitoring and analyzing data to make data-based decisions. Students must complete 1000 hours to meet BCBA requirements and 670 hours for BCaBA requirements. 100 hours is equivalent to 1 credit. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

SPED 5919 - ABA Intensive Practicum (0.5-5 Credits)

Supervised field experience with a Board Certified Behavior Analyst for time spent directly working with individuals who require behavioral support. Students must complete 750 hours to meet BCBA requirements and 500 hours for BCaBA requirements. 75 hours is equivalent to 1 credit. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

SPED 5930 - Special Education Generalist Internship and Site Seminar I (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Max hours: 2 Credits.

Grading Basis: Letter Grade

SPED 5931 - Special Education Generalist Internship and Site Seminar II (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 5932 - Special Education Generalist Internship and Site Seminar III (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 5933 - Special Education Generalist Internship and Site Seminar IV (3-8 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teachers, and candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 7840 - Independent Study: SPED (1-6 Credits)

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Special Education, MA

Introduction

The Master of Arts in Special Education prepares educators to deliver high-quality educational experiences for students with a range of emotional and learning needs, including gifted children. We strive to prepare compassionate leaders who are dedicated to social justice and excellence for all students and families. This degree equips you with the most impactful and effective skills for leading inclusive classrooms and collaborating with professionals in the field and the community.

Students learn from nationally and internationally recognized faculty members who are known for developing innovative practices and

designing research in literacy, language, social and emotional growth, gifted and talented learners, students with learning disabilities and building a diverse teacher workforce.

Program Requirements

The 30 credit hour Personalized Professional MA path provides the opportunity for you to personalize your coursework to your specific professional goals as an educator. **This MA does NOT lead to a license or an endorsement.** A current teaching license is not required for the Personalized Professional MA.

Code	Title	Hours
Core Courses		
Select three of the following:		9
SPED 5000	Universal Design for Learning (UDL)	
SPED 5010	Intentional Interventions for Exceptional Learners	
SPED 5140	Assessment: Inquiry, Instruction, & Intervention	
SPED 5151	Slashing Stigmas: Promoting Positive Behaviors	
SPED 5300	Family, Professional, and Community Collaboration	
SPED 5500	Transition and Secondary Methods in Special Education	
SPED 5740	Intersections of Literacy, Culture, & Exceptionality	
SPED 5780	Literacy Intervention for Exceptional Learners	
Thematic Course Categories		
In consultation with your faculty advisor, select five courses from the Thematic Course Categories to customize your learning: https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Course 1		3
Course 2		3
Course 3		3
Course 4		3
Course 5		3
Research Course		
RSEM 5080	Research In Schools	3
Capstone Course		
SPED 5401	Advanced Seminar in Special Education	3
Total Hours		30

Capstone Requirement

SPED 5401 Advanced Seminar in Special Education is the Special Education Capstone class, which fulfills the COMPS requirement for MA students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the SPED Program. The capstone should tell the story of what was learned, specific areas of interest, and address ongoing barriers experienced in the field. Your Capstone requirements will be fulfilled by completion of SPED 5401 Advanced Seminar in Special Education.

Program Requirements and Courses

To complete the SPED Education program and earn a master’s degree, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, remote, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year. Several courses have case study requirements with a K-12 student population. If you are not working in a school, you will consult with your instructor for an alternative assignment.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Special Education with Applied Behavior Analysis Emphasis, MA

Introduction

The demand for special education professionals certified in Applied Behavior Analysis is growing. Children with special needs require specific and optimized learning environments created by qualified professionals to aid in their growth and skill development. University of Colorado Denver’s strengths-based/assets-based approach to teaching special education prepares you to understand the strengths of every child in every family.

Enhance your ability to work with individuals with special learning and behavior needs by earning a master’s degree in Special Education with a concentration in Applied Behavior Analysis from CU Denver.

This program prepares professionals to follow best practices for ABA in a variety of settings. If you already have a bachelor’s degree, earning this degree will help you to advance or diversify in your field. You will build your competencies in psychology and advance your skills in working with individuals with special needs.

Program Requirements

Code	Title	Hours
SPED 5450	Introduction to ABA and Terminology	3
SPED 5460	ABA Practical Applications	3
SPED 5470	ABA Data	3
SPED 5480	ABA Advanced Data and Behavioral Plans and Applications	3
SPED 5440	Ethics and Implementation ABA	3
SPED 5490	Autism In Early Intervention	3
SPED 5495	Advanced Topics in Applied Behavior Analysis	3
<i>Focus Area/Electives ¹</i>		
SPED 5300	Family, Professional, and Community Collaboration	3

SPSY 7980	Clinical Supervision & Admin of Psych Services Practicum ¹	3
SPED 5918	ABA Practicum (must be taken 3+ semesters)	3
Total Hours		30

¹ **Focus Area/Elective Guidelines:** Focus area courses have been grouped to meet the professional goals of ABA candidates. This set of 3 courses may be on-campus, off-campus, online, or hybrid depending on the course. Tuition for each course varies depending on the type of course it is. On campus courses are more expensive than hybrid or online.

Special Education with Special Education Generalist (Ages 5-21) Endorsement, MA

Introduction

The MA in Special Education with added Special Education Generalist endorsement is designed for currently licensed teachers seeking career advancement and the expertise needed to work effectively with students with special needs and from diverse backgrounds. The program is fully accredited by the Colorado Department of Education and the Council for Exceptional Children.

Program Requirements

Code	Title	Hours
Special Education ¹		
SPED 5030	Understanding (dis)Ability in Contemporary Classrooms ²	3
SPED 5300	Family, Professional, and Community Collaboration	3
SPED 5151	Slashing Stigmas: Promoting Positive Behaviors	3
SPED 5500	Transition and Secondary Methods in Special Education	3
SPED 5740	Intersections of Literacy, Culture, & Exceptionality	3
SPED 5780	Literacy Intervention for Exceptional Learners	3
SPED 5140	Assessment: Inquiry, Instruction, & Intervention	3
SPED 5010	Intentional Interventions for Exceptional Learners	3
Additional Courses as Necessary ¹		
Advanced Study		
LDFS 6320	Mind, Brain, and Education	3
RSEM 5080	Research In Schools	3
or RSEM 5050	Classroom Assessment	
SPED 5401	Advanced Seminar in Special Education	3
Total Hours		33

¹ Based on a comprehensive record review (i.e. teaching experience & classroom placements), SPED 5933 Special Education Generalist Internship and Site Seminar IV (Approximately 192 Hours or 24 days) may be required at the discretion of SPED program faculty.

² Waived if already completed

Capstone Requirement

SPED 5401 Advanced Seminar in Special Education is the Special Education Capstone class, which fulfills the COMPS requirement for MA

students. The intent of the Capstone is to help candidates synthesize learning through a final project that speaks to academic and professional development in the SPED Program. The capstone should tell the story of what was learned, specific areas of interest, and address ongoing barriers experienced in the field. Your Capstone requirements will be fulfilled by completion of SPED 5401 Advanced Seminar in Special Education.

Program Requirements and Courses

To complete the SPED Education program and earn a master's degree and endorsement, students must complete the appropriate course work as outlined. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Course Scheduling

During the fall and spring semesters, most courses are offered in the late afternoon and evening and meet for three hours once a week over a 16-week semester. Courses are offered in various formats, including completely face-to-face classes, hybrid, remote, or online classes. In the summer semester, three-to eight-week sessions are offered, and courses may be in the morning, afternoon or evening.

Planning

For practicing full-time teachers, we recommend taking one course each fall and spring semester, and up to two courses each summer. Plan carefully because some courses are only offered once a year. Several courses have case study requirements with a K-12 student population. If you are not working in a school, you will consult with your instructor for an alternative assignment.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Special Education Generalist Endorsement Only

Introduction

Added Special Education Generalist Endorsement to License

To be endorsed as a special education generalist for ages 5-21, a teacher must hold a bachelor's degree from a four-year accepted institution of higher education, be licensed at the elementary or secondary level, have completed the plan of study from one of the program options for the preparation of special education generalist, have passed the state special education assessment (i.e. Praxis), and have demonstrated all required state and national standards.

Recommendations for endorsements are made by the program, but endorsement is granted by the State of Colorado. Individual state requirements vary. Students should consult with the Colorado Department of Education (<http://www.cde.state.co> (<http://www.cde.state.co.us/>)) or another state in which they wish to be endorsed for the most updated endorsement requirements.

Program Requirements

This course plan does NOT lead to MA degree.

Code	Title	Hours
Courses		
Listed in recommended sequence		
LDFS 5240	Cognition and Instruction ¹	3
or SPED 5030	Understanding (dis)Ability in Contemporary Classrooms	
SPED 5300	Family, Professional, and Community Collaboration	3
SPED 5151	Slashing Stigmas: Promoting Positive Behaviors	3
SPED 5500	Transition and Secondary Methods in Special Education	3
SPED 5740	Intersections of Literacy, Culture, & Exceptionality	3
SPED 5780	Literacy Intervention for Exceptional Learners	3
SPED 5140	Assessment: Inquiry, Instruction, & Intervention	3
SPED 5010	Intentional Interventions for Exceptional Learners	3
Additional Courses as Necessary ²		
Total Hours		24

¹ if SPED 5030 Understanding (dis)Ability in Contemporary Classrooms is already completed

² Based on a comprehensive record review (i.e. teaching experience & classroom placements), SPED 5933 Special Education Generalist Internship and Site Seminar IV (Approximately 192 Hours or 24 days) may be required at the discretion of SPED program faculty

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0 (B average). Please refer to the Student Handbook for information on Academic Probation. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

STEM Education

Office: 1380 Lawrence Street Center, 701

Telephone: 303-315-6300

E-mail: academicservices@ucdenver.edu

Overview

The STEM Education program promotes elementary and secondary mathematics and science teachers' passion, confidence, and competence in providing mathematics and science teaching-learning processes informed by insightful theories, effective learning activities, and innovative teaching strategies, as well as by international perspectives. This program focuses on the integration of theory, research, and practice to enable teachers to make instructional decisions and implement mathematics and science lessons that promote students' conceptual understandings and problem solving, including opportunities for doing research.

Programs

- Mathematics Education, MSED (p. 482)
- STEM Education with a concentration in Mathematics Education, MA (p. 482)
- STEM Education with a concentration in Math and Science Education, MA (p. 483)

- STEM Education with a concentration in Science Education, MA (p. 483)
- Middle School Math Endorsement (p. 484)
- Mathematical Content Knowledge for Teaching, Graduate Certificate (p. 484)

Faculty

Information about faculty in this program is available online at: <https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/stem-education> (<https://education.ucdenver.edu/about-us/faculty-directory/-in-category/categories/sehd/program-areas/stem-education/>)

Math Education (MTED)

MTED 5002 - Elementary Mathematics Teaching I (3 Credits)
Prepares elementary teachers to teach mathematics to PreK-6 students while applying principles of the National Council of Teachers of Mathematics to mathematical learning. Teachers explore ways to help all elementary students become flexible and resourceful mathematical problem solvers. Cross-listed with MTED 4002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

MTED 5003 - Elementary Mathematics Teaching II (3 Credits)
Develops the mathematical and pedagogical understandings and competence of elementary teachers, focusing on instructional assessment, principles, and practices. Cross-listed with MTED 4003. Prereq: MTED 4002 or MTED 5002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: MTED 5002 or MTED 4002. Restriction: TCHR-MA plan or BMA subplan.

MTED 5030 - Theories Of Mathematics Learning (3 Credits)
Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits. Grading Basis: Letter Grade

MTED 5040 - Mathematics Teaching - Theory and Practice (3 Credits)
Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max Hours: 9 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

MTED 5050 - Critique Of Mathematics Education Research (3 Credits)
Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits. Grading Basis: Letter Grade

MTED 5060 - Developmental Pathways In Students' Mathematical Thinking (3 Credits)

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5070 - (Re)Humanizing the Teaching and Learning of Mathematics (3 Credits)

Expands educators' conceptions of society's role in determining what counts as mathematics to be taught and learned. Develops understanding of historical and systemic marginalization in mathematics education. Increases abilities to address issues of privilege and oppression that impact students' opportunities. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5300 - Curriculum and Methods for Teaching Mathematics (3 Credits)

Fosters teachers' use of task-based mathematics pedagogy, including orchestrating students' mathematical discourse, to develop mathematics classrooms in which the teacher builds from students' current understandings, accommodates for students' differences, and has high expectations for all students. Cross-listed with MTED 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5301 - Assessment and Equity in Mathematics Instruction (3 Credits)

Examines mathematics assessment and equity from both a teacher's and a student's perspective. Focuses on assessment as a process, during which a teacher gathers evidence of students' mathematical knowledge and understanding and then uses that evidence to make instructional decisions. Prereq: Concurrent enrollment in an internship or permission of instructor. Cross-listed with MTED 4301. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5400 - Mathematics for Elementary Teachers (3 Credits)

Key mathematical concepts for K-6 teachers informed by NCTM & Common Core State Standards, such as place-value number systems, rational, proportional, & algebraic reasoning, geometrical concepts, & statistical/probability ideas. Students' meaningful, enjoyable learning is promoted via problem solving activities. Cross-listed with MTED 3040. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5619 - Expanding Conceptions of Number: Quantity and Operation (3 Credits)

Teachers' learning will focus on quantities and operations in place value number systems, how students understand such systems, and how teaching may promote students' progress. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5620 - Developing Fractional & Proportional Reasoning (3 Credits)

Teachers' learning will focus on quantities and operations involved with ratio, fraction, and proportion; and on how students understand ratio, fraction and proportion; and how teaching may promote students' progress. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

MTED 5621 - A World of (Different) Numbers: Quantity and Operation (3 Credits)

Develops K-12 teachers' understanding of number systems and the ability to foster students' understanding. Focuses on number, quantity, and operation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Cross-listed with MTED 4621. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5622 - Expanding Conceptions of Algebra (3 Credits)

Develops K-12 teachers' understanding of algebra concepts and the ability to foster students' understanding. Focuses on equivalence, variable, covariation, and function. Applicable to teaching students at all grade levels in line with the K12 Common Core Standards. Cross-listed with MTED 4622. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5623 - Geometrical Ways Of Reasoning (3 Credits)

Develops K-12 teachers' geometrical reasoning and the ability to foster students' reasoning. Addresses transformation, measurement, classification, objects, imagery, formulas, and investigation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Cross-listed with MTED 4623. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5840 - Math Education Independent Study (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MTED 7030 - Theories Of Mathematics Learning (3 Credits)

Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7040 - Mathematics Teaching - Theory and Practice (3 Credits)

Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MTED 7050 - Critique Of Mathematics Education Research (3 Credits)

Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7060 - Developmental Pathways In Students' Mathematical Thinking (3 Credits)

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7840 - Math Education Independent Study (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Science Education (SCED)

SCED 5004 - Elementary Science Teaching (3 Credits)

This course explores issues in elementary school science learning and teaching. Teacher candidates will develop knowledge of the nature of science and science content, engage in scientific inquiry, work to identify student conceptions, and plan and enact science instruction. Cross-listed with SCED 4004. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: TCHR-MA plan or BMA subplan.

SCED 5050 - Introduction to Science Teaching and Learning (2 Credits)

Focus on conceptual development, conceptual change, collaborative learning, students' conceptions of various topics in science, practical issues encountered in facilitating learning, managing the classroom, formative and summative assessment, and differentiating instruction in a collaborative environment. Seminar for Learning Assistants. Student must be serving as a Learning Assistant in the CU Denver LA program. Max hours: 2 Credits.

Grading Basis: Letter Grade

SCED 5340 - Equity & Culture in Science Education: Local/Global (3 Credits)

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 4340 and ENVS 5340. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5350 - Issues and Trends in Science Education (3 Credits)

Explores the current issues and trends in science education related to theory, pedagogy, practices, curriculum, and other contemporary topics. Cross-listed with SCED 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5360 - Physics Teaching and Learning (3 Credits)

In this course, we will explore how people learn physics, and how physics is and can be taught. We will read literature in physics, physics education research, education, psychology, and cognitive science and apply it to your physics teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5365 - Physics Teaching as Research (3 Credits)

In this course, you will research your teaching of physics, with the explicit goals of improving your teaching practice and improving student learning of physics. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5400 - Theory and Pedagogy of Science Learning (3 Credits)

Examines current issues, strategies, materials, and technology related to the teaching and learning of science at the middle and secondary school levels. Science curriculum, teachers' pedagogical content knowledge, and research in science education are investigated. Cross-listed with SCED 4400. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SCED 5401 - Inquiry Science Pedagogy and Practices (3 Credits)

An in-depth study of inquiry science pedagogy and practices and how inquiry science supports standards-based education to make science accessible to ALL learners. The course provides a review of research on pedagogy and practices that support student understanding, problem solving and creativity through the use of inquiry science. Prereq:

Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with SCED 4401. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5416 - Math-Science Connections: Outdoor (3 Credits)

(Primarily for pre-secondary teachers.) Explores science concepts through outdoor activities appropriate for middle-grade students.

Topics include how the nature of science and mathematics informs pedagogy, national and state standards, earth science and paleontology, orienteering and map usage, water analysis, astronomy and entomology. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5500 - The Nature of Science (3 Credits)

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 7500. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5540 - Foundations of School Health Education (3 Credits)

This course is an overview of the principles of behavior theory as they relate to health education in both theory and practice. The course will examine the characteristics of effective school-based health education programs. Issues of ethnicity, culture, and race as they relate to health will be examined throughout the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5550 - Curriculum Materials in Health Education (3 Credits)

This course will support the application of behavior theory as it applies to specific health content knowledge and skills. Special attention will be given to the skills, instructional strategies, and techniques needed to develop a culturally responsive classroom to promote success for all learners. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5560 - Health Education Teaching Practices (3 Credits)

The course provides an overview of health education teaching and learning strategies for use in school settings. Action research will be introduced and utilized as a method to examine current teaching practices. Role-play, student assessment development, differentiation of instruction, and culturally responsive classroom practices will be examined. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5650 - Environmental Education (3 Credits)

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Cross-listed with ENVS 4650 and ENVS 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5660 - Energy Education (3 Credits)

Explores current energy problems. Students examine such topics as fuels from plants, fuels from wastes, fossil fuels, nuclear energy, wind energy, geothermal energy, solar energy, and energy conservation. Includes demonstration of available educational resources for grades K-12. The purpose of the course is to make technical aspects of energy accessible to the lay person. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5670 - Experiential Learning In The Parks (3 Credits)

This course guides students through their experiences in a summer field placement, using readings, discussions and other interactive tools that focus on place-based education. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5690 - Curriculum Development in Place-Based Education (3 Credits)

Students in this course apply knowledge about place-based education in schools and communities for educational purposes. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5780 - Storytelling (1-4 Credits)

Explores the history, function, philosophy, and techniques of storytelling. This class also includes collecting, selecting, preparing, developing, and delivering stories. Research and resources are emphasized. Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SCED 5800 - Curriculum Workshop for Science Teachers (0.5-4 Credits)

Opportunity to work on curricular projects and problems in the schools.

Explore various formal and informal learning environments such as study groups and after-school activities. Prereq: 18 semester hours in education and teaching experience or permission of instructor.

Repeatable. Max Hours: 36 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 36.

SCED 5840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SCED 5920 - Readings in Elementary Education (1-4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade

SCED 5930 - Internship in Secondary Education (3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

SCED 6110 - Science and Math Curriculum Studies (3 Credits)

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Prereq: Graduate student status. Cross-listed with SCED 7110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

SCED 6120 - International Perspectives on the Curriculum (3 Credits)

Considers schooling patterns in the U.S., the U.K., Japan, Australia, and several European countries, examining different approaches to curriculum issues in relation to social, historical, and economic factors. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 6840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SCED 6950 - Master's Thesis (4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

SCED 6990 - Special Topics (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SCED 7110 - Science Math Curriculum Study (3 Credits)

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Restriction: Graduate student status. Cross-listed with SCED 6110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

SCED 7500 - The Nature of Science (3 Credits)

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 5500.

Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 7840 - Independent Study (1-3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

Science, Technology, Engineering & Math Education (STME)

STME 5001 - Planning for Learning in Mathematics and Science (3 Credits)

This course explores aspects of complex curriculum and instructional concepts through the lens of mathematics and science educators. A focus will include: Socio-cultural learning theory in Math and Science; standards-based instruction; instructional design; formative & summative assessment, and differentiation so that meaningful instruction becomes accessible to all students. Cross-listed with STME 4001. Max hours: 3 Credits.

Grading Basis: Letter Grade

STME 5051 - STEM Capstone: Secondary Education (3 Credits)

This course provides Secondary STEM Education students with a capstone learning experience that integrates knowledge of STEM content, students, and school context into socially-just and culturally responsive practices. Cross-listed with STME 4051. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

Mathematics Education, MSED

Introduction

The MSED in mathematics education integrates educators’ learning of mathematical content, pedagogy, and research. This approach fosters educators’ ability to teach effectively at the K-12 level. The program arises from collaboration between the School of Education and Human Development (SEHD) and the Department of Mathematical and Statistical Sciences in the College of Liberal Arts and Sciences (CLAS). It interweaves both mathematical and educational understandings that lead to a truly interdisciplinary program, including a possibility to conduct one’s own research project.

Program Requirements

The MSED core courses provide a sound basis in mathematics education, including learning theories and progressions, teaching approaches, and deep appreciation for diversity and philosophical foundations.

Code	Title	Hours
MSED Core		
MTED 5030	Theories Of Mathematics Learning	3
MTED 5040	Mathematics Teaching - Theory and Practice	3
MTED 5050	Critique Of Mathematics Education Research	3
MTED 5060	Developmental Pathways In Students' Mathematical Thinking	3
RSEM 5080	Research In Schools	3
or RSEM 5120	Introduction to Research Methods	
Mathematics Core		
<i>Required Mathematics Core</i>		
Select three courses in consultation with faculty advisor ¹		9
<i>Optional Course Work</i>		
Select one of the following:		6
Thesis Option (if chosen)		
SCED 5950	Master's Thesis	
Non-Thesis Option: Elective Courses		
Select two courses relevant to the grade level with which the teacher works in consultation with a faculty advisor.		
Total Hours		30

¹ Students may select 5000-level MATH, MCKE, MTED, or RSEM courses relevant to the grade-level with which the teacher works with approval from faculty advisor. (Note: Several mathematical content courses are taught by the mathematics education faculty.)

Program Requirements and Courses

To complete the MSED program and earn a master’s degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Planning

Students take 1-2 courses per semester. Core courses are offered one per semester on a rotating basis.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

STEM Education with a concentration in Mathematics Education, MA

Introduction

The need for qualified and effective mathematics teachers has never been greater. University of Colorado Denver recognizes that impactful mathematics teaching requires a deep understanding of both student learning and mathematic content. Graduates of the STEM MA mathematics education concentration are positioned to work successfully in leadership roles in urban and diverse schools and understand the important role mathematics play in their student’s lives.

Program Delivery

This degree is available on-campus or completely online.

Program Requirements

This degree plan does not include a license or an endorsement.

This degree option is available for on-campus students. Core Courses are fully online. You may choose elective courses in on-campus, hybrid, or fully online formats.

Code	Title	Hours
Core Courses		
MTED 5621	A World of (Different) Numbers: Quantity and Operation	3
MTED 5622	Expanding Conceptions of Algebra	3
MTED 5623	Geometrical Ways Of Reasoning	3
MTED 5301	Assessment and Equity in Mathematics Instruction	3

Thematic Courses

The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning.<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories> (<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/>)

Course 1	3
Course 2	3
Course 3	3
Course 4	3
Course 5	3

Research Course

RSEM ____ ¹	3

Capstone Course

MTED ____ ²	

Total Hours	30

¹ To be decided by student with Faculty Advisor

² The Capstone is completed in your final core course.

Capstone Project

The Capstone project fulfills the COMPS requirement for the MA Degree. The Capstone project should extend beyond your graduate coursework. The project can be on a topic of your choosing. Prior to beginning the project, get your advisor's approval for your project topic. The project can take many forms. Most typically, students submit a written paper as a final product. Yet, we are open to a range of possibilities. We recommend that the project be something that helps to further your learning and growth in your practice of teaching students. We intentionally provide a broad range of possibilities for final projects, so that we can best tailor the projects to students' learning and growth goals.

Program Requirements and Courses

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Planning

Students take 1-2 courses per semester. Core courses are offered one per semester on a rotating basis.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

STEM Education with a concentration in Math and Science Education, MA

Introduction

Math-science educators are in high demand. CU Denver recognizes this shortage and prepares teachers to effectively guide today's learners. Math-science teachers need expertise in understanding STEM learning and highly effective assessment and teaching practices. CU Denver's MA in STEM Education with a concentration in math-science education prepares you to be a leading educator at the forefront of this field.

Program Requirements

This degree plan does not include a license or an endorsement.

This degree has both on-campus and online course options. Online courses are 100% online only. Hybrid courses are available to distance students. Distance students participate via video conference in hybrid courses and local students attend face to face sessions. Therefore, the program may be completed with online courses.

Code	Title	Hours
Core Courses ¹		
	Two courses from the Mathematics Education (MTED) on campus or online core	6
	Two courses from the Mathematics Education (MTED) on campus or online core	6
Thematic Course Categories		

In consultation and with approval from your faculty advisor, select five courses from the Thematic Course Categories to customize your learning: <https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories> (<https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/>)

Course 1	3
Course 2	3
Course 3	3
Course 4	3
Course 5	3
Research Course	
RSEM ____ ¹	3
Total Hours	30

¹ To be decided by student with Faculty Advisor.

Capstone Course:

The Capstone Project is completed within one of your core MTED or SCED courses.

Capstone Project

The Capstone project fulfills the COMPS requirement for the MA Degree. The Capstone project should extend beyond your graduate coursework. The project can be on a topic of your choosing. Prior to beginning the project, get your advisor's approval for your project topic. The project can take many forms. Most typically, students submit a written paper as a final product. Yet, we are open to a range of possibilities. We recommend that the project be something that helps to further your learning and growth in your practice of teaching students. We intentionally provide a broad range of possibilities for final projects, so that we can best tailor the projects to students' learning and growth goals.

Program Requirements and Courses

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above. All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Planning

Students take 1-2 courses per semester. Core courses are offered one per semester on a rotating basis.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

STEM Education with a concentration in Science Education, MA

Introduction

CU Denver's STEM Education MA with a concentration in science education prepares licensed practicing teachers to think critically about the nature of science education from a research oriented

perspective. Graduates of this program are positioned to be leaders in their communities, and in diverse schools.

Program Requirements

This degree plan does not include a license or an endorsement.

This degree has both on-campus and online options. Online options are 100% online only. Hybrid courses are available to distance students. Distance students participate via video conference in hybrid courses and local students attend face-to-face sessions. Therefore, the program may be completed with online courses.

Code	Title	Hours
Core Courses		
SCED 5340	Equity & Culture in Science Education: Local/Global	3
SCED 5500	The Nature of Science	3
SCED 5350	Issues and Trends in Science Education	3
SCED 6110	Science and Math Curriculum Studies	3
Thematic Course		
The Thematic Course Categories is a collection of courses across all SEHD disciplines designed to allow students to expand student learning: https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories (https://education.ucdenver.edu/academic-services/student-resources/thematic-course-categories/)		
Course 1		3
Course 2		3
Course 3		3
Course 4		3
Course 5		3
Research Course		
RSEM ____ ¹		3
Capstone Course		
SCED ____ ²		
Total Hours		30

¹ To be decided by student with Faculty Advisor

² The Capstone is completed in your final core course.

Capstone Project

The Capstone project fulfills the COMPS requirement for the MA Degree.

The Capstone project should extend beyond your graduate coursework. The project can be on a topic of your choosing. Prior to beginning the project, get your advisor's approval for your project topic. The project can take many forms. Most typically, students submit a written paper as a final product. Yet, we are open to a range of possibilities. We recommend that the project be something that helps to further your learning and growth in your practice of teaching students. We intentionally provide a broad range of possibilities for final projects, so that we can best tailor the projects to students' learning and growth goals.

Program Requirements and Courses

To complete the STEM Education program and earn a master's degree, students must complete the appropriate course work as outlined above.

All courses require a grade of B- or better and a 3.0 minimum GPA is required for graduation.

Planning

Students take 1-2 courses per semester. Core courses are offered one per semester on a rotating basis.

Active Status

Students must complete their programs within seven years, maintaining a GPA of 3.0. Students typically take four courses each calendar year. Failure to enroll over three contiguous semesters will result in a requirement to submit readmission materials.

Middle School Math Endorsement

Introduction

CU Denver's online Middle School Math endorsement is designed for currently licensed teachers who are seeking career advancement and a deeper understanding of how to engage middle school students in math. Mathematical learning opportunities matter and not all students receive the same kinds of opportunities. This endorsement will give you the unique qualifications you need to support and challenge students with diverse abilities and backgrounds.

Program Requirements

Required Courses

Code	Title	Hours
MTED 5621	A World of (Different) Numbers: Quantity and Operation	3
MTED 5622	Expanding Conceptions of Algebra	3
MTED 5623	Geometrical Ways Of Reasoning	3
MTED 5301	Assessment and Equity in Mathematics Instruction	3
RSEM 5100	Basic Statistics	3
MTED 5300	Curriculum and Methods for Teaching Mathematics	3
MTED 5070	(Re)Humanizing the Teaching and Learning of Mathematics	3
Select one of the following: ¹		3
MTED 5030	Theories Of Mathematics Learning	
MTED 5040	Mathematics Teaching - Theory and Practice	
MTED 5050	Critique Of Mathematics Education Research	
MTED 5060	Developmental Pathways In Students' Mathematical Thinking	
Total Hours		24

¹ Students may take one of these courses when they are offered in hybrid and/or online format.

Mathematical Content Knowledge for Teaching, Graduate Certificate

Introduction

This certificate program is focused, first and foremost, on augmenting practicing teachers' mathematical content knowledge for teaching.

Each course is organized to fit teachers at all K-12 school grade levels, including mathematics and special education teachers. Major themes for each course are informed by national and state standards, particularly the new Colorado Common Core Standards. Each course will engage the participating teachers in exploring and expanding their own comprehension of the topics while examining and increasing their understanding of how students develop such knowledge.

Certificate Requirements

Required Courses

Each course stands alone; you may want to take one class or all three. All courses are three graduate credit hours and may be applied directly toward a full master's degree in STEM Education-Mathematics Education. Additional courses and applications are required for the master's degree. Courses may be taken in any order.

Code	Title	Hours
MTED 5621	A World of (Different) Numbers: Quantity and Operation	3
MTED 5622	Expanding Conceptions of Algebra	3
MTED 5623	Geometrical Ways Of Reasoning	3

Certificate format is online.

Teaching, MA

Office: 1380 Lawrence Street Center, Suite 701

Telephone: 303-315-6300

Email: academicservices@ucdenver.edu

Website: <https://education.ucdenver.edu/>

Mailing Address:

School of Education & Human Development
P.O. Box 173364, Campus Box 106
Denver, CO 80217-3364

Overview

The Graduate Teacher Education program culminates in a Master of Arts in Teaching and an initial teacher license. The program prepares educators who are culturally affirming and responsive, collaborate closely with families and communities, and have the knowledge and skills to create engaging, relevant, and rigorous classroom communities where all students can achieve and grow. We work alongside our P-12 partner educators throughout the CU Denver Professional Development School Network comprised of over 20 urban schools across numerous districts in the Denver metro region. Teacher education students live the life of a teacher for an entire academic year while enrolled in the program through a series of residency internships in a professional development school. Ultimately our goal is that all teacher candidates-whether their emphasis is elementary, secondary, or special education- have the unique knowledge and skills to positively impact urban and diverse schools and act with a sense of urgency to support equity in education for all children. The Graduate Teacher Education Program is a nationally accredited program that exceeds expectations.

Education Pathways

The graduate teacher education program at CU Denver is designed to allow individuals with a minimum of a bachelor's degree to seek a

master's degree along with an initial Colorado teacher's license in the following areas:

- **Elementary Education (K-6)** (48 semester hours)
- **Secondary Education (7-12)** (39 semester hours)
 - English
 - Mathematics
 - Science (General Science, Biology, Earth Science, Physics, Chemistry)
 - Social Studies
 - World Language (K-12) (Spanish, French)
- **Middle School Math (6-8)** (39 semester hours)
- **Special Education Generalist (Ages 5-21)** (54 semester hours)
- **Dual General Education/Special Education (63-72 semester hours)**

Program Structure

The program admits teacher candidates in cohort groups that begin either in the summer or fall. The cohort model provides a unique learning community for candidates and engenders significant support for success. The program includes full time 1 - 1.5 year licensure plans for regular education and a 1.5 - 2 year full-time option for initial special education and dual special education. Students enroll in course work at the university and clinical internships in one of CU Denver's professional development schools throughout the program. By enrolling in several courses and internships together, elementary, secondary, and special education teacher candidates are well prepared to support K-12 students with a wide range of diverse needs.

Clinical Experience in Professional Development Schools

While in the program, teacher candidates intern in a professional development school for an entire academic year, gradually beginning with two days a week early on and increasing over time to five days per week by the end of the program. University courses are closely integrated with the sequence of clinical internship experiences providing teacher candidates with multiple opportunities to engage in the authentic work of teachers. Teacher candidates co-teach closely with practicing teachers in the school and gradually assume full responsibility for teaching by the end of the program. Elementary teacher candidates generally spend an entire academic year in a single partner elementary school, whereas secondary teacher candidates spend their internships in one of the partner middle schools and one of the partner high schools. Special education teacher candidates complete internships at multiple levels, P-12 due to the wide-span of their license that enables them to support students with special needs ages 5-21. The schools are located in several Denver metropolitan districts serving large populations of low-income and/or minority students, as well as a sizeable number of students for whom English is a second language as well as students with special needs. Each school is supported by a site professor from the university one day per week and by a master teacher, called a site coordinator, who supports teacher candidates through their academic year of internships.

Assessment

Both the coursework and the internship experiences have been created to align with the Colorado Teacher Quality Standards, as well as frameworks for culturally and linguistically responsive instruction and Universal Design for Learning. Students in all programs engage in a common set of learning opportunities and internship assessments. They also engage in Program Level Assessments at different stages of the program. Colorado

mandates that all teacher education programs be “performance-based” in order to recommend candidates completing the program for licensure; thus all candidates in the Urban Community Teacher Education program must demonstrate proficiency in both the university-based coursework and their internships.

Programs of Study

Due to the complex nature of teacher preparation that is governed by state and national accreditation and legislative mandates that can change from year to year, please see current programs of study in the teacher education handbook.

Master of Arts in Teaching Admissions Requirements

Admission Deadline: February 15 for summer and April 1 for fall start dates.

Graduate Teacher Education Admission Requirements

Competitive undergraduate cumulative GPA of 3.0 (Students with a lower GPA may be considered under certain conditions. Please see SEHD website.)

- Completion of any outstanding prerequisite content courses that are needed per a transcript evaluation. Consult with your advisor to create a plan for completing these requirements.
- A complete application which can be obtained online at <https://education.ucdenver.edu/academic-services/admissions> (<https://education.ucdenver.edu/academic-services/admissions/>) which includes transcripts, essays, recommendations, and an interview.
- **Attend an admissions interview.** All individuals who submit a **complete** application will receive an email with the interview invitation that contains all details approximately one week before the scheduled interview. During this group interview, prospective students participate in highly interactive group discussions and activities to further assess each applicant’s readiness as well as aid in internship placement.

School of Public Affairs

Leadership

Dean

Paul Teske, Dean and Distinguished CU Professor

Associate Deans

Tanya Heikkila, Associate Dean for Faculty Affairs

Kelly Hupfeld, Associate Dean for Student Affairs

Assistant Dean

Kathy Kilpatrick, Assistant Dean of Administration and Finance

Contacts

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Website: publicaffairs.ucdenver.edu (<https://publicaffairs.ucdenver.edu/>)

Mailing Address

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P.O. Box 173364
Denver, CO 80217-3364

Prospective Student Inquiries

Rebecca (Gianarkis) Mannie, Recruiting & Admissions Coordinator

Phone: 303-315-2560

Email: spa.admissions@ucdenver.edu

Graduate Student Advising

Graduate Students Last Name A-L:

Dawn Savage, Advisor and Academic Services Manager

303-315-2743

Email: dawn.savage@ucdenver.edu

Graduate Students Last Name M-Z:

Antoinette Sandoval, Student Services Coordinator

303-315-2487

Email: antoinette.sandoval@ucdenver.edu

International Graduate Students Last Name A-Z:

Scott Steinbrecher, Senior Coordinator of International Student Programs

303-315-2755

Email: scott.steinbrecher@ucdenver.edu

Career Advising

Joan Fishburn, Alumni Relations & Career Services Specialist

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Email: joan.fishburn@ucdenver.edu

Overview

Lead. Solve. Change. The nationally-ranked School of Public Affairs at the University of Colorado Denver prepares leaders for government, nonprofit, and criminal justice professions. Driven by a public service mission, our students are committed to solving pressing public problems and improving their communities for the better. School of Public Affairs graduates work as legislators, policy analysts, nonprofit leaders, law enforcement professionals, local government managers, community advocates, university faculty and administrators, and in many other fields and professions, linked by the common goal of contributing to the greater good.

The School of Public Affairs offers degree programs with optional concentrations, as well as minors and undergraduate and graduate certificate programs. All of our programs are committed to developing the rigorous and ethical thinking necessary for public service professionals. Courses integrate theoretical knowledge with the real-world application of important skills, and students frequently have the opportunity to work on behalf of government agencies and nonprofit organizations. Programs are offered in a variety of formats to accommodate both full-time students and working professionals, all taught by the same highly-regarded faculty. The size of the school means that all students can receive individualized advising and attention, and students and alumni benefit from in-house career and alumni services.

Highlights

The MPA program is accredited by the Network of Schools of Public Policy, Affairs, and Administration (NASPAA), the authoritative accrediting body in the field of public policy, affairs and administration.

US News & World Report 2021 Rankings in the Nation:

- #25 – Best Graduate Public Affairs Schools
 - #10 – Environmental Policy and Management
 - #11 – Public Finance and Budgeting
 - #13 – Nonprofit Management
 - #22 – Public Management and Leadership
 - #25 – Public Policy Analysis
- #24 - Online Master of Criminal Justice

Course List for School of Public Affairs

Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/public-affairs/#coursestext>) for a complete course list for the School of Public Affairs.

School of Public Affairs Admissions Information

Application Deadlines

Applications for admission are accepted for the fall, spring and summer terms for most programs. For the latest application deadlines, visit the admission web page (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) of the School of Public Affairs website.

School of Public Affairs Departments and Programs

- Public Affairs (p. 487)
 - Criminal Justice, BA/MCJ (p. 502)
 - Criminal Justice, MCJ (p. 503)
 - Public Administration, BA/MPA (p. 504)
 - Public Administration, MPA (p. 505)
 - Public Administration/Applied Geography and Geospatial Sciences, MPA/MA (p. 509)
 - Public Administration/Criminal Justice, MPA/MCJ (p. 510)
 - Public Administration/Economics, MPA/MA (p. 510)
 - Public Administration/Juris Doctorate, MPA/JD (p. 511)
 - Public Administration/Public Health, MPA/MPH (p. 511)
 - Public Administration/Urban and Regional Planning, MPA/MURP (p. 511)
 - Public Affairs, PhD (p. 512)
 - Crime Analysis Graduate Certificate (p. 513)
 - Disasters, Hazards, and Emergency Management (DHEM) Graduate Certificate (p. 513)
 - Education Policy Graduate Certificate (p. 514)
- Emergency Management and Homeland Security (EMHS) Graduate Certificate (p. 514)
- Environmental Policy And Management (EPM) Graduate Certificate (p. 515)
- Gender-Based Violence (GBV) Graduate Certificate (p. 515)
- Interpersonal Violence and Health Care Graduate Certificate (p. 516)
- Local Government Graduate Certificate (p. 516)
- Nonprofit Management Graduate Certificate (p. 517)
- Public Policy Analysis Graduate Certificate (p. 517)

Public Affairs

Programs

- Criminal Justice, BA/MCJ (p. 502)
- Criminal Justice, MCJ (p. 503)
- Public Administration, BA/MPA (p. 504)
- Public Administration, MPA (p. 505)
- Public Administration/Applied Geography and Geospatial Sciences, MPA/MA (p. 509)
- Public Administration/Criminal Justice, MPA/MCJ (p. 510)
- Public Administration/Economics, MPA/MA (p. 510)
- Public Administration/Juris Doctorate, MPA/JD (p. 511)
- Public Administration/Public Health, MPA/MPH (p. 511)
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- Local Government Graduate Certificate (p. 516)
- Nonprofit Management Graduate Certificate (p. 517)
- Public Policy Analysis Graduate Certificate (p. 517)

Faculty

To learn more about our renowned faculty, please view their bios on the School of Public Affairs website (<https://publicaffairs.ucdenver.edu/people/faculty/>).

Criminal Justice (CRJU)

CRJU 5001 - Criminal Justice Systems, Policies, and Practice (3 Credits)

Examines current critical issues in the justice system affecting law enforcement, courts, corrections, and recent social developments related to personnel. The development, implementation, and analysis of public policy in the field of criminology are explored in depth. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5002 - Criminological Theory (3 Credits)

Explores the origins of criminal behavior and impact of crime on society. Theories of deviant, delinquent, and criminal behavior are examined, and practical implications and application of theoretical constructs are analyzed through current research paradigms and empirical research. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5003 - Research Methods (3 Credits)

Examines applied research designs and analytical models. Research problems in the system are utilized to illustrate the application and interpretation of alternative research strategies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5004 - Statistics for Criminal Justice (3 Credits)

Introduces principles of descriptive and inferential statistics and provides tools for understanding research findings. Topics include hypothesis testing and point estimation; bivariate and multivariate measures of association; inferential statistics; ordinary least square regressions, logistic regression analyses. Prereq: CRJU 5003 with a B- or better. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CRJU 5003 with a B- or better. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5005 - Law & Society (3 Credits)

Introduces a variety of topics related to the functions and societal implications of law. The course focuses on social/ legal theory and analyzes law and legal institutions from a critical perspective. Materials provide content on how to evaluate law and legal institutions, especially in relation to equality, justice, and fairness. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5010 - Seminar Nonprofit Management (3 Credits)

Provides an overview of principles and concepts unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students also are introduced to the history and importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and 5110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5015 - Intelligence Writing and Briefing (3 Credits)

This course provides an overview of intelligence analysis and aims to provide the skills and tools necessary to effectively communicate results to consumers. Students will be familiarized with the analytical, perceptual, and cognitive pitfalls of conducting intelligence analysis and learn a variety of strategies for overcoming these problems, preparing professional intelligence products, and presenting executive-level intelligence briefings. Cross-listed with CRJU 4015. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5100 - Administration of Criminal Justice (3 Credits)

Analyzes the policies and practices of agencies involved in the criminal justice process, from the detection of crime and arrest of suspects through prosecution, adjudication, sentencing and imprisonment, to release. The patterns of decisions and practices are reviewed in the context of a systems approach. Cross-listed with CRJU 7100 and CRJU 4100. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5140 - Nonprofit Financial Management (3 Credits)

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Cross-listed with PUAD 4140 and 5140. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5150 - Domestic Violence and Crime (3 Credits)

This course examines the criminal justice systems response to intimate partner violence by focusing on the interactions between victims, offenders and the individual components of the criminal justice system. By exploring the dynamics of intimate partner violence this course addresses the theory, history, research, legislation and policy implications related to the criminal justice system's response to violence against women. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5200 - Wrongful Convictions (3 Credits)

Explores the continuum of justice-system errors ranging from persons who are falsely accused (arrested, prosecuted, and tried) to those who are wrongly convicted and imprisoned or sentenced to death row and erroneously executed. Cross-listed with CRJU 4200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5210 - Prisoner Reentry (3 Credits)

Focuses on prisoner reentry, including strategies to prepare inmates for release, reduce recidivism, and facilitate adjustment in the community while meeting the demands of public safety. Cross-listed with CRJU 4210. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5220 - The American Jury System (3 Credits)

Examines historical and current issues in jury decision making and dynamics. The course explores issues such as jury size, eyewitness testimony, and jury reform. Court decisions are examined as a comprehensive understanding of jurors and their role. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5240 - Gang Patterns and Policies (3 Credits)

Focuses on gangs, gang members, and gang activity in the United States. Topics include the origins and historical development of gangs, gang migration, gang related crime and violence, gang victimization, and the effects of gang involvement on communities and families. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5250 - Criminal Offenders (3 Credits)

Introduces the core principles and tools of motivational interviewing as it is used currently with the offender population. Students learn how to utilize these skills working with specific offender populations and how to motivate these often resistive clients to change their thinking patterns and behaviors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5260 - Crime and Literature (3 Credits)

This seminar focuses on nonfiction literature as it relates to criminality and the criminal justice system. Samples of social commentary, biographies/autobiographies, and other accounts presented within various types of nonfiction literature are examined in order to more fully understand and appreciate their impact in shaping public opinion of the criminal justice system. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5270 - Case Studies in Criminal Justice (3 Credits)

This seminar examines the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies that utilize observation, participant observations, and interviews as their primary research methodology are assigned in order to develop a critical understanding of the social marginalization and cultural aspects of the lives of real human beings living constantly on the edge of the law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5280 - Computer Crime (3 Credits)

The course is designed to enhance interest, experience and knowledge in leadership that promotes professionalism and ethical behavior. Individual and organizational dynamics are explored through a critical perspective, focusing on criminal justice roles and responsibilities. The class teaches effective leadership skills in areas such as team building, strategic planning, and decision making. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 7280. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5285 - Trauma in the Criminal Justice System (3 Credits)

This course examines trauma as widely prevalent among those who are served by the criminal justice system and experienced disproportionately among criminal justice professionals. Trauma prevalence, theory, prevention, and interventions through a trauma stewardship lens for victims of multiple forms of trauma, including vicarious traumatization and secondary traumatic stress, will be emphasized through an all-inclusive view across the criminal justice continuum. Cross-listed with CRJU 3285. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5290 - Capital Punishment (3 Credits)

This course examines in-depth a comprehensive range of issues surrounding capital punishment. Specifically, it looks at the history of capital punishment, methods of execution, legal issues and case law, deterrence, miscarriages of justice, discrimination in the capital charging and sentencing system, and the role of the death penalty internationally. The coverage of these issues relies on many sources, including scholarly readings, non-fiction books, court cases, websites, videos and documentaries, speeches, and media. Cross-listed with CRJU 3290. Max hours: 3 Credits.

Grading Basis: Letter Grade

CRJU 5301 - Crime and the Media (3 Credits)

Surveys the relationship between mass media and the U.S. criminal justice system. Special attention is given to the role of media in the social construction of reality. Emphasis is placed on the application of social constructionism to criminal justice related social problems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5320 - Police Administration (3 Credits)

Considers the major issues confronting police executives, such as professionalism, recruitment, selection, training, deployment, innovation, evaluation, and charges of brutality, inefficiency, and corruption. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5325 - Qualitative Methods for Criminal Justice (3 Credits)

Focuses on qualitative methods applicable to research in the field of criminal justice. The primary focus is on ethnographic approaches employing such fieldwork techniques as observation, participant observation, interviews, content analysis, life histories and case studies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5331 - Crime Analysis and GIS (3 Credits)

Serves as an introduction to the uses and applications of analysis within law enforcement, including the role of analysis in law enforcement, theories that guide analysis and police practices, commonly used data sources and technology, and techniques for various types of analysis utilized in law enforcement. Cross-listed with CRJU 4331. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: "B" or better in CRJU 5003 and 5004

CRJU 5361 - Capstone Seminar (3 Credits)

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of faculty and criminal justice professionals. Prereq: CRJU 5000, CRJU 5100, CRJU 5120, CRJU 5321. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: CRJU 5001 or 5100, 5002 or 5120, 5003 or 5321, 5004 or 5000 and 5005

Additional Information: Report as Full Time.

CRJU 5391 - Sex Offenders and Offenses (3 Credits)

Focuses on challenges practitioners face in managing sex offenders, including the development of programs and partnerships that can effectively assess, track, control, and treat sex offenders through all phases of the system. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5410 - Victimology (3 Credits)

Examines victim-offender relationships, interactions between victims and the criminal justice system, and connections between victims and other social groups and institutions among various populations. The course addresses the theory, history, research, legislation and policy implications related to the social construction of "the victim." Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5420 - Violence in Society (3 Credits)

This course examines various aspects of violence, including distribution over time and space; situations and circumstances associated with violent victimization and offending; and how social institutions, community structure, and cultural factors shape violent events. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5430 - Drugs, Alcohol, and Crime (3 Credits)

This course provides an interdisciplinary overview of theory, research and policy issues surrounding the relationship between drugs, alcohol and crime, and responses of the criminal justice system. Special attention is paid to the socially constructed nature of illegal substances and connections with U.S. drug policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5510 - Contemporary Issues in Law Enforcement (3 Credits)

Examines current thinking and experience with respect to changing and reforming police programs and practices. The course focuses primarily on the American police experience, reviewing major innovations, exploring their rationale, and examining organizational impediments to their implementation. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5520 - Corrections (3 Credits)

Examines the development and implementation of correctional systems in America. Topics include the origins of correctional efforts and the evolution of the prison system, punishment and rehabilitation rationales in the context of sentencing models, the social organization of the prison, including inmate subcultures and staff work strategies, and the inmates' rights movement and the impact of judicial intervention in correctional settings. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5530 - Community Corrections (3 Credits)

Analyzes theories and practices of probation and parole, responses of paroling authorities to public pressures and court controls, and their implications for rehabilitation. Efforts to bridge institutional settings and community life, as well as the feasibility and effectiveness of treating individuals under sentence in the community, are reviewed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5540 - Juvenile Justice (3 Credits)

Examines policies and practices of agencies in processing youthful offenders through the juvenile court system, reviews trends in juvenile justice policymaking, and assesses changes in response to juvenile crime by both the juvenile justice and criminal justice systems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5550 - Criminal Justice Policy and Planning (3 Credits)

Provides a survey of conceptual and design strategies in criminal justice policy analysis. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected policy issues in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5551 - Courts, Law & Justice (3 Credits)

Analyzes judicial organization, court administration, and criminal court judicial decision making practices within the context of the broader operation of the criminal justice system. Special attention is paid to the social organization of the courtroom, examining the special roles of judges, prosecutors, and defense attorneys. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5552 - Criminal Justice Ethics (3 Credits)

Offers a normative framework within which to explore ways to increase sensitivity to the demands of ethical behavior among criminal justice personnel. The application of a normative perspective enhances the possibility that moral problems are better understood, more carefully analyzed, and rendered more tractable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5553 - Women, Crime, and Justice (3 Credits)

Explores issues surrounding women as offenders, victims, and criminal justice professionals. Investigates explanations for the involvement of women in illegal activities. Analyzes the plight of battered women, rape victims, and other female victims. Examines the participation of women in law enforcement judicial processes, corrections, and lawmaking. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5555 - Profiling Criminal Behavior (3 Credits)

Examines the dynamics of individual criminal acts utilizing inductive and deductive methodology to profile criminal behavior, offender characteristics, crime scene investigation, evidence collection, and case linkage of specific categories of crimes. Topics include homicide, serial crime, stalking. Max hours: 3 Credits.

Grading Basis: Letter Grade

CRJU 5571 - The Social Organization of Crime (3 Credits)

Explores the relationship between neighborhood social disorganization and crime from a social ecology perspective. The course examines the underlying social causes of phenomena such as criminal victimization, violent and property crime, neighborhood fear, neighborhood deterioration, and recidivism. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5572 - Race, Crime, and Justice (3 Credits)

Examines the influence of race in the administration of justice. Special attention is paid to the policy implications of racial disparities in the criminal justice system. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5574 - White Collar Crime (3 Credits)

Employs social science and legal approaches to examine crime committed by corporations as well as by individuals in white-collar occupations. Topics include how such crimes are socially defined, who commits them, which social contexts promote them, who is victimized, and how society and the criminal justice system respond. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3160. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5575 - Offenders With Mental Health Disorders (3 Credits)

Examines the offender who may be mentally disordered. Special attention is paid to the various phases of the criminal justice system where psychiatrists are involved (e.g., diversion, fitness, insanity and sentencing), dangerous sex offender legislation, "not guilty by reason of insanity" and "guilty but mentally ill" statutes, and issues concerning confidentiality, informed consent, and treatment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 7575 and 3575. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5576 - Social Science in the Criminal Justice System (3 Credits)

Examines the use of social science as a tool for legal analysis within the criminal justice system. The course examines how social science research is used to resolve relatively simple factual disputes, then moves on to more complex issues that arise when social science is invoked to make or change law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5644 - Environmental and Hazards Law (3 Credits)

This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5644. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5650 - Public Service in Emergency Management and Homeland Security (3 Credits)

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, PUAD 5650, and CRJU 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5655 - Principles of Emergency Management (3 Credits)

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5655, PUAD 4012, and CRJU 4012. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5710 - Environmental Crime and Justice (3 Credits)

Environmental Crime and Justice will look at the disproportionate benefits and burdens of environmental "profits" (e.g., open spaces, clean air and water, etc.) and contamination (which results from behaviors that include, but are not limited to crime), as well as the implications of these disparities on certain areas, particularly communities of color and indigenous communities. The role of the government, the private sector, non-profit organizations, and the environmental justice movement in creating, perpetuating, and minimizing environmental crime and its disparities will be examined, with part of the focus being on theories within critical criminology that address issues of environmental crime injustices. The nature of environmental offenders and victims will be explored. Policies and programs that have been organized to address environmental crime and other injustices and their effects (e.g., quality of life, birth defects, childhood asthma, lead poisoning, cancer, etc.) will be reviewed, including responses by the criminal justice system to environmental crime. Students will examine critically the consistencies and inconsistencies in institutionalized mechanisms that are set up, either intentionally or more subtly, to create, reinforce, or minimize environmental crimes and injustices. Cross-listed with CRJU 4710. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5720 - Public Policies for Hazards and Disasters (3 Credits)

Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5720. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5910 - Nature and Scope of Interpersonal Violence (3 Credits)

Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5910. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5920 - The Psychology of Interpersonal Violence (3 Credits)

Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5920. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5930 - Interpersonal Violence Law and Public Policy (3 Credits)

Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5930. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change (3 Credits)

Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5940. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6171 - Homicide Studies (3 Credits)

This class examines criminal homicide from all angles: the offenders, the victims, the police, prosecution, defense, jurors, and judges. It looks at investigative techniques and the latest science involved in criminal investigation, jury selection, and other criminal justice system issues. It focuses on what is arguably the most serious form of homicide, murder, exploring sensational cases that involve delving into the psyche of murderers. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6600 - Special Topics in Criminal Justice (3 Credits)

Specialized seminar intended to provide students and faculty with the opportunity to explore significant themes, issues, and problems in the field of criminal justice. Topics vary from semester to semester. Course may be taken for credit more than once, provided subject matter is not repeated. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6840 - Independent Study: CRJU (1-3 Credits)

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the MCJ degree. MCJ Prereq: 12 semester hours of criminal justice course work and permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6910 - Internship in Criminal Justice (3 Credits)

For students who have not had practitioner experience, a full- or part-time internship is required. Note: Masters students must have completed a minimum of 18 credit hours at the graduate level to take this course. Dual Degree students must have completed a minimum of 6 credit hours at the graduate level. Minimum cumulative GPA of 3.0 required to take this course. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6950 - Master's Thesis (3-6 Credits)

Independent original research project supervised and evaluated by a thesis committee. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits. Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

CRJU 8840 - Independent Study (1-3 Credits)

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the PhD degree. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 8990 - Doctoral Dissertation (1-10 Credits)

Upon admittance to candidacy, students must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 7.0 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the PhD director to register for only 3.0 credit hours to maintain continuous enrollment. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

Public Administration (PUAD)

PUAD 5001 - Introduction to Public Administration and Public Service (3 Credits)

Examines fundamental theories, structures, and processes of governance in the United States, including the evolving roles and responsibilities of public, nonprofit, and private sectors. Covers topics including public service values and ethics, cross-sector and intergovernmental partnerships, and comparative public administration. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5002 - Organizational Management and Behavior (3 Credits)

Course covers elements which, when combined, create a resilient learning organization. Topics include organization theory and design, managing human capital, group development and performance, inter- and intra-group communication, information management, and ethical decision-making. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5003 - Research and Analytic Methods (3 Credits)

Examines qualitative and quantitative research methods used to answer questions and inform decisions in public and nonprofit settings. Methods covered include reviewing scholarly literature; formulating research questions; selecting appropriate design, data collection and sampling strategies; and analyzing data. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5004 - Economics and Public Finance (3 Credits)

Evaluates the role of government with respect to provision and financing of public goods. Explores 5 broad topics: 1) welfare & microeconomics 2) expenditure theory 3) resource mobilization (emphasis on taxation) 4) fiscal federalism 5) basic budgeting & analytical tools. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5005 - The Policy Process and Democracy (3 Credits)

Introduces theoretical and applied studies of the policy process. Policy process includes how (I) issues are conceptualized and brought forward as problems needing action; (II) policies are designed and selected; and (III) enacted policies are implemented, monitored, evaluated, and revised. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5006 - Public Service Leadership and Ethics (3 Credits)

Provides understanding of the role played by leaders within and across public and nonprofit organizations, and in complex social environments. Examines theories of leadership, skills and processes employed by effective leaders, and ethical conduct of leaders in shaping societal values. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5007 - Qualitative Research Methods (3 Credits)

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis. The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a research project. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7007. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5008 - Evidence-Based Decision-Making (3 Credits)

Course provides opportunities for students to use skills developed in Research and Analytic Methods (including developing research/evaluation questions, designing surveys/interview guides, and analyzing data) to inform decisions and/or develop recommendations in multiple policy, management, and program evaluation scenarios. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5010 - Rocky Mountain Program (3 Credits)

This program encourages participants to examine their public sector roles, develop an understanding of their leadership styles, develop communication skills, and enhance their ability to think more systematically and strategically in their positions. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5030 - Denver Community Leadership Forum (3 Credits)

Designed to increase cross sector cooperation and enhance personal leadership skills and knowledge, program is administered annually February to November. Students gain skills in conflict management, participate in Outward Bound program in July, and learn leadership theories and concepts from a variety of presenters and trainers.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5110 - Seminar in Nonprofit Management (3 Credits)

This course provides an overview of the principles and concepts that are unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students are also given an introduction to the history and the importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and CRJU 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5115 - Effective Grant Writing for Nonprofit and Public Sector Managers (3 Credits)

This course is designed to provide students with the knowledge and skills to perform one of the most critical functions for any public or nonprofit sector agency today: gaining funds through proposals. Students learn how to locate and analyze funding opportunities through public and private funders and how to research, plan and write effective and competitive proposals. The course provides theoretical and practical knowledge about persuasive writing, the proposal submission and review process, building effective relationships with funders and how to proceed after post-funding decisions (positive or negative). Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5120 - Nonprofits and Public Policy (3 Credits)

Examines the intersection of public policy and the nonprofit world and the ways in which each affects the other. The course examines current policy issues that relate to the nonprofit sector such as conversion of nonprofit to for-profit status, regulation of the nonprofit sector, issues of financial management, the role of nonprofits in devolution and privatization of government services, tax exemptions, "charitable choice," donor control, governance and the future of the future of the sector. The course examines the ways nonprofits have affected the policy process and public policies by exploring the factors that shape social movements, nonprofit advocacy, strategies of influence, and the role of nonprofits in social movements such as Civil Rights and the environment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5125 - Civil Society and Nongovernmental Organizations (3 Credits)

This course is designed for students interested in the international nonprofit sector. The course compares non-Western forms of civil society with the American tradition of civil society. Students will learn about the efforts of Nongovernmental Organizations (NGOs) working in Third World countries to influence democracy, free association, and/or increased political and societal pluralism. Additionally, the course will focus on NGO management and governance issues in countries where there are strict controls and limits on the activities of NGOs. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5130 - Collaboration Across Sectors (3 Credits)

The blurring of the three economic sectors - government, business and nonprofits- continues to increase as more partnerships are developed across sectors. This course focuses on collaboration and partnerships involving public, nonprofit and for-profit organizations. Additionally, students are expected to gain an understanding of the issues and policies associated with the bidding, contracting, program delivery and reporting processes when nonprofit organizations are contracted to achieve public sector goals and/or private sector objectives. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5140 - Nonprofit Financial Management (3 Credits)

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4140 and CRJU 5140. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5145 - Philanthropy (3 Credits)

Today, the organized field of philanthropy and its companion field, impact investing, are growing at a remarkable speed. This course will explore the origins of philanthropy and impact investing and provide students with an in-depth understanding of how philanthropy works today and the nuances that exist among different forms of philanthropy and investment: individual giving, foundations, corporate philanthropy, and impact investing. It will also explore new trends among individual and institutional investors and unpack the different approaches that funders are taking to influence how services are delivered and the striking efforts to affect systems changes. Cross-listed with PUAD 4145. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5150 - Fundraising & Financial Resource Development (3 Credits)

Designed to provide a comprehensive overview of funding sources available to nonprofit organizations (e.g., foundation and governmental grants, individual and corporate donations, entrepreneurial sources of revenue and events.), as well as detailed information on how to secure support of the various sources presented. Additionally, students are expected to gain both theoretical and practical knowledge relevant to why it is important to diversify an organization's revenue streams. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5160 - Nonprofit Boards and Executive Leadership (3 Credits)

The important roles and responsibilities of a voluntary board of directors and the process of governing are often misunderstood. This course explores the special powers of a nonprofit board of directors as framed by and responsive to public policy. From the perspective of organizational behavior and theory, the course examines the leadership role and interplay between board members and the executive director. The examination includes a comparative analysis of different governing models, and explores fundamental questions of board composition, the role of advisor boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5170 - Strategic Management for Nonprofit and Public Managers (3 Credits)

Designed to train public and nonprofit managers in the effective use of strategic management tools and techniques traditionally used by corporations. Strategic management tools and skills, although traditionally used by business, should not be seen as the exclusive domain of corporations. The course teaches students how to adapt traditional strategic management capabilities to the particular conditions of public and nonprofit organizations. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5180 - Social Entrepreneurship (3 Credits)

Designed to introduce students to the concept of social entrepreneurship. Using nonprofit (and public) organizational examples, students gain an understanding of what it means to be an innovative manager. Students study techniques designed to advance an organization's mission and increase organizational effectiveness, accountability and efficiency through the use of for-profit techniques within a nonprofit context. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5190 - Comparative Nonprofit Sector Development (3 Credits)
Students will analyze the evolution, scope, structure, financing, and role of nonprofit sector in select countries. Through readings, lectures, case studies, students will gain a depth understanding of civil society organizations' role with respect to the market and state. Restriction: Restricted to Grad and Non-Degree Grad students only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5200 - Education Policy (3 Credits)
This course provides a broad overview of the history, purposes, and structure of public education in the United States, including topics such as education systems and governance, institutional actors, funding, education reform trends, and policy implementation and outcomes. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5210 - Education Finance (3 Credits)

This course provides students with a fundamental understanding of public school funding and expenditures in the United States, and the impact of school finance policy and practice in driving educational and social outcomes. Key issues addressed include revenue sources and funding mechanisms; the evaluation of school funding through the lenses of equity, adequacy, efficiency, and the achievement of desired educational outcomes; specific topics such as teacher compensation, special education, and facilities funding; the strategic use of funding to drive reform in K-12 education; and the future of public education funding. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5220 - Human Resource Management (3 Credits)

Covers human resource functions in public and nonprofit agencies. Topics include job analysis, compensation, recruiting, selection, rewarding, training and development. Contemporary issues concerning civil service reforms are also presented. Cross-listed with PUAD 4220. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PUAD 5230 - Education Systems Leadership (3 Credits)

This class uses the combined lens of history, public administration, organizational theory, and public policy analysis to better understand the complexity of public education systems in America. The class focuses heavily on recent changes to the "one best system" model that developed from the 1850s through 2000, and particularly emphasizes reforms that aim to provide greater autonomy to individual schools and encourage more of a governance role for school districts. The class is very interactive and includes a number of guest speakers and experts. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5250 - Intergovernmental Management (3 Credits)

Surveys the basic literature of intergovernmental management and examines the interactive role of managers at federal, state, and local levels of government. Emphasis is placed on current intergovernmental issues. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5260 - Managing Diversity (3 Credits)

Using a systems approach, diversity within organizations is examined through the construction and review of theories in private, public, and nonprofit organizations. Existing models of managing diversity are examined and analyzed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5271 - Managing Conflict and Change (3 Credits)

Explores the process of change in organizations, communities, society, and conflicts that arise. Through the use of relevant case studies and role playing exercises, students are provided a practical framework for looking at change and managing conflict associated with change. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5280 - American Public Service Environment (3 Credits)

The American Public Service Environment. This course, intended for students from cultures outside the United States and for whom English is a second language, introduces students to public service professionals working at area government and nonprofit organizations. Students learn about the American system of government, American political and cultural values, and the workplace context for public service in America. Through interactions with public service professionals and course assignments, students improve their language skills as well as their knowledge about government and civil society in America. Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program). Max Hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program)

PUAD 5290 - Comparative Public Administration for International Students (3 Credits)

This year-long course provides mid-career international students with individualized attention as they actively compare and contrast American public administration with that of their home countries, develop their own organizational and personal leadership skills, and prepare to implement lessons learned in the U.S. in their own cultural and professional context. Restriction: Restricted to International students enrolled in the International MPA (IMPA) program only. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program)

PUAD 5310 - Policy Formulation & Implementation (3 Credits)

Building on PUAD 5005, students learn how policy is developed and implemented in several levels of government - local, state, federal - and within organizations themselves. The course makes use of the case studies to explore the intricacies of developing and implementing policy and the political, economic, and institutional contexts that affect these two states of policy development. Students also consider the different criteria that can be used to judge the effectiveness of programs and policies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5320 - Public Policy Analysis (3 Credits)

Provides training in the systematic analysis of policy and program initiatives using an economics orientation and employing a case method. The course covers benefit-cost analysis, cost-effectiveness analysis, present values, and the treatment of multiple criteria in public sector program analysis. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5325 - Public Private Partnerships (3 Credits)

This course has been designed to introduce students to public private partnerships (PPPs) as a field of study and practice using Colorado as a laboratory for current practice, policy, strategy, management and finance. Students will engage current examples of PPPs as cases, learn and exchange in class presentations with guest lecturers currently leading PPPs and evaluate projects in class assignments doing research, analysis, and field interviews. Students will enhance their knowledge as well as skills commonly used in public, private, nonprofit and enterprise management and the public policy context and narrative of PPPs in international and U.S. practice. Cross-listed with PUAD 4325. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5330 - Intermediate Statistical Analysis (3 Credits)

Follows PUAD 5003/7003 and is focused on more advanced statistical techniques to be used in research. These techniques include the use of regression in time series analysis; binary response; nonlinear, logistic, and profit models; and factor and path analysis. Evaluating potential problems with model specification and the remedies are included. Students are required to test hypotheses using these models with a data set. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7330. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5350 - Program Evaluation (3 Credits)

Describes the theory and methodology for the design of social research and demonstration projects and the application of analytic and statistical methods for evaluating public programs. Focus is on the application of evaluation methods and techniques of data interpretation. Report preparation is emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5361 - Capstone Seminar (3 Credits)

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of faculty and public administration professionals. Prereq: PUAD 5001, 5002, 5003, 5004 or 5503, 5005 and 5006 and 5008 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: PUAD 5001, 5002, 5003, 5004 or 5503, 5005 and 5006 and 5008 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

PUAD 5370 - Media and Public Policy (3 Credits)

Explores the conventions and practices of the print and electronic media in the United States. The course enables students to better understand the place of the media in society, the way the media look at themselves and how journalists confront conflicting values in the performance of their roles. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5380 - Citizen Participation: Theory and Practice (3 Credits)

Tackles the issues of citizen participation and community involvement in theory and practice. Students work in class on understanding the theoretical foundations that are relevant to citizen participation. Students engage in significant out-of-class projects to ground them in the practice of public involvement. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5410 - Administrative Law (3 Credits)

Examines legal aspects of policy implementation particularly the relationship between courts and administrative agencies. Covers standards of judicial review and agency action; administrative procedure and due process; selected special topics such as rights, liabilities, and immunities of public employees; and administrative discretion and scientific uncertainty. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5420 - Law and Public Policy (3 Credits)

Examines the relationship between courts and legislative assemblies. Explores how legislators use the policy process to shape and influence the exercise of judicial authority, and how the courts affect the policy process in reviewing the constitutionality of state and federal legislation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5440 - Negotiation and Conflict Resolution (3 Credits)

Focuses on concepts and skills necessary to negotiate policy and management decisions and manage internal and external conflicts.

Designed to help students understand the dynamics that affect negotiations and to apply the principles and strategies of negotiation in a variety of decision making and dispute resolution contexts. Cross-listed with PUAD 4440. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5455 - Environmental and All-Hazards Management Law (3 Credits)

Conveys knowledge of the statutes, regulations, administrative law, and court decisions governing the management of hazards, natural resources, and environmental protection, with a focus on the risk and liability that individuals and organizations face in these areas of law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5455. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5460 - Political Advocacy (3 Credits)

Addresses advocacy & lobbying issues of public policy & govt problems. Special attention is given to how advocacy process works in the public sector & policy making bodies & how lobbying techniques & processes can be understood. General focus on practical applications at all levels of govt with primary attention to state & local govt. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5501 - Contemporary Issues in Revenue and Tax Administration and Policy (3 Credits)

This course provides a contemporary evaluation of Colorado's tax structure, revenue system, and the state budget. The interaction of politics, the initiative process, the State Constitution, and stakeholders is studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5502 - Public Financial Management and Policy (3 Credits)

Provides basic understanding of issues & tools relevant to financial mgmt of public & non-profit org, including managerial acct (managing resources & obligations, investing idle funds, reporting, financial statement analysis, overview of budgeting, revenue forecasting, & costing) & debt management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5503 - Public Budgeting and Finance (3 Credits)

Covers concepts to manage the fiscal purse, prioritize resources, use financial documentation, and analyze fiscal data. Includes budget policy, content, format, processes, performance management, forecasting, inflation adjustment, time value of money, cost analysis, financial condition analysis, and spreadsheet competency. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5540 - Organization Development (3 Credits)

Studies the dynamics involved in managing and facilitating change in organizations by application of behavioral science knowledge. Emphasis is placed on both cognitive and experiential learning. A background in organization theory and administrative behavior is required. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5615 - Health Policy (3 Credits)

Draws upon existing policy models and evaluates the status of health policy formulation and implementation. Health policy topics include Medicaid and Medicare, managed care, health care reform proposals, telemedicine, the non-profit and for-profit role in health. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5625 - Local Government Management (3 Credits)

Relates the systems, processes, and principles of public management to the local government environment. Public management concepts such as strategic planning, bureaucracy, formal and informal organizational structures, human resource planning, management control, systems theory, and administrative behavior are explored within the context of local government. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5626 - Local Government Politics and Policy (3 Credits)

Examines local government from the perspective of politics and public policy making. The course focuses on local government political structures, policy analysis and formulation, political forces in administrative decision making, and the relationships between professional administrators and elected officials. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5628 - Social Problems and Policies (3 Credits)

Examines local government and nonprofit approaches to addressing common urban social problems. Topics covered may include urban poverty, crime, education, housing, and immigration. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5630 - Economic Development (3 Credits)

As governments search for new ways to be efficient, improve performance and leverage resources, they are also looking at their communities, states and regions in terms of competitiveness, international trade and globalization innovation, collaboration and partnerships. This course will look at practices where economic development includes these elements: the Colorado Innovation Network, the Colorado Office of Economic Development and International Trade, the Metro Denver and Denver South Economic Development Partnerships, Mile High Connects, the Downtown Denver Partnership, and public-private partnerships across multiple sectors in transportation, broadband, water and innovation. Students will develop an economic development strategy based on knowledge and tools learned in the course. Political and professional leadership will be part of the dialog. Crosslisted with PUAD 4630. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5631 - Seminar in Environmental Politics and Policy (3 Credits)

Examines the fundamental principles of politics and policy that shape strategies of environmental protection. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in environmental politics and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5632 - Seminar in Environmental Management (3 Credits)

Examines the practical challenges facing environmental managers today, using a series of case studies. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in the practice of environmental management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5638 - Colorado Politics, Policy, and Administration (3 Credits)

This course focuses on the state-level policy-making process in Colorado, and how that process is affected by local, state, and federal politics, administration, and other policy-making constraints applicable to the state. Substantive topics covered will vary, but students will be exposed to a wide range of perspectives and experiences from practitioners and policy influencers engaged in state-level politics, policy-making, and administration. Cross-listed with PUAD 4638. Restriction: Restricted to Graduate level and Non-Degree Graduate students only. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PUAD 5644 - Environmental and Hazards Law (3 Credits)

This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection. Cross-listed with CRJU 5644. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5650 - Public Service in Emergency Management and Homeland Security (3 Credits)

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, CRJU 4010, and CRJU 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5655 - Principles of Emergency Management (3 Credits)

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5655, CRJU 4012, and PUAD 4012. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall.

PUAD 5710 - Public Sector Technology (3 Credits)

This course addresses the impact and current use of technology in the modern government and nonprofit sector environments, including implications for interacting with citizens and organizational stakeholders, organizational decision-making and communication, and core functions such as budgeting and human resources. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5720 - Public Policies for Hazards and Disasters (3 Credits)

Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5720. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5740 - Sustainable Energy Policy (3 Credits)

This course will cover the basic principles and operation of policy and regulation that impact the production and use of energy (with a focus on transportation and electricity generation) from all of the major sources currently available and used. We will analyze (and, through a sustainability lens, critically evaluate) energy from water (hydroelectric, hydrokinetic), coal, domestic and international petroleum, natural gas and nuclear reactors. A significant portion of the course will focus on electricity generation and associated policy, technologies and regulation. In the context of each energy source and use, we will review and discuss sustainability practices, policies, and, issues. Cross-listed with PUAD 5740. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5910 - Nature and Scope of Interpersonal Violence (3 Credits)

Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5910. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5920 - The Psychology of Interpersonal Violence (3 Credits)

Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5920. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5930 - Interpersonal Violence Law and Policy (3 Credits)

Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5930. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change (3 Credits)

Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5940. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5960 - Interpersonal Violence and Health Care (3 Credits)

Provides students with the knowledge and skills necessary for responding to the health care needs of patients experiencing interpersonal violence (IPV). Also explores how healthcare professionals can develop public & institutional discourses that transform healthcare policies & systems to address the health needs of IPV survivors.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5961 - Interpersonal Violence, Health Advocacy and Systems Change (3 Credits)

Explores how healthcare professionals can develop successful public & institutional discourses that transform healthcare policies & systems to address the health needs of patients experiencing interpersonal violence. Methods of advocacy, activism & organizational change that produce positive results including effective educ techniques. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6600 - Special Topics: Public Administration (1-6 Credits)

Studies special topics relevant to public administration, such as public/private sector partnerships, community participation, international development, conflict management, regionalism, managing economic options for Colorado, and nonprofit management and marketing. Each semester various topics are studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6650 - Professional Topics in Public Service (1-3 Credits)

This series of elective courses delivers just-in-time professional skills and topical content relevant to the needs of today's public service workforce. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6700 - Community-Based Field Experience and Seminar (3 Credits)

Students work in small groups to complete substantive projects for government agencies and community organizations, led by faculty instructor. Topics addressed will vary depending on the needs of the community partner. Prerequisite: Completion of PUAD 5003 and permission of instructor. Restriction: Restricted to SPA graduate students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: Completion of PUAD 5003 and permission of instructor.

Restriction: Restricted to SPA graduate students.

PUAD 6840 - Independent Study: PUAD (1-6 Credits)

Affords students the opportunity to do independent, creative work.

Prereq: Permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6910 - Internship (1-3 Credits)

For students who have not had government experience. Studies and reports are made while students have full- or part-time administrative traineeships, internships, or similar positions in government agencies or government-related organizations. Prereq: Completion of the common core courses. It is recommended that at least three of the track courses also be completed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6950 - Master's Thesis (3-6 Credits)

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

PUAD 7007 - Qualitative Research Methods (3 Credits)

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis.

The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective.

Students are required to conduct a search project. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

Cross-listed with PUAD 5007. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 7010 - Advanced Seminar in International Public Policy (3 Credits)

Explores advanced approaches and techniques in the study of public policy from international perspectives. The course includes lectures, student research presentations, and discussions with international public policy scholars. The course also includes public policy readings and writing assignments tailored to the student interests and needs.

Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8010 - Historical and Comparative Foundations of Public Administration (3 Credits)

A doctoral seminar on developments and changes in public administration as a field of study. It examines how theory and practice have evolved and how the field is defined, studied and taught. It must normally be taken during the first full semester of the doctoral program.

Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8020 - Seminar in Public Management (3 Credits)

An in-depth examination of contemporary literature, concepts, and theories of public management. Current issues and research problems are emphasized to prepare students for their advanced research.

Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8030 - Seminar in Public Policy (3 Credits)

Offers an in-depth examination of contemporary literature, concepts, and theories of public policy, with an emphasis on policy process. Current issues and research problems are emphasized to prepare students for their advanced research. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8040 - Seminar In Economic and Institutional Foundations of Public Affairs (3 Credits)

Offers an in-depth examination of the economic and institutional foundations of public affairs, with an emphasis on the evolution of theory and research in these fields. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8050 - Quantitative Methods I (3 Credits)

Introduces foundational principles & techniques of quantitative analysis in social sciences generally & in public affairs specifically, incl statistical inference, regression analysis, other related estimation techniques, & commonly-used statistical software packages. Students should have taken master level stats course w/in last 3 yrs. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8060 - Seminar On The Conduct Of Empirical Inquiry (3 Credits)

Introduces basic elements of research design in the social sciences, focusing on the relationship between theories and methods, concept development and measurement, selection of observations or cases, and alternative methods of data collection and analysis. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8070 - Quantitative Methods II (3 Credits)

Moves beyond basic linear regression techniques by covering advanced analytic methods for improved causal inference. Students will also be introduced to data management skills and techniques for using longitudinal data. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8840 - Independent Study: PUAD (1-6 Credits)

(Doctoral level) Affords students the opportunity to do independent, creative work. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8990 - Doctoral Dissertation (1-10 Credits)

Once students are admitted to candidacy, they must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 5 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the Ph.D. director to register for fewer semester credit hours. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

Additional Information: Report as Full Time.

Criminal Justice, BA/MCJ

Introduction

Please click here (p. 486) to see School of Public Affairs information.

The Pathway BA/MCJ program is designed to allow students to work concurrently toward the Bachelor of Arts in Criminal Justice (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/public-affairs/criminal-justice-ba/>) (BACJ) and the Master of Criminal Justice (p. 503) (MCJ). Graduate credit hours earned while enrolled in the BA/MCJ program can be counted toward both the BACJ and MCJ. This program offers high-achieving students the opportunity to complete their undergraduate and graduate degrees in criminal justice in less time than completing both separately. The undergraduate and graduate degrees are conferred upon completion of each of the degree's requirements.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Declaring This Major

- Please contact spa.advising@ucdenver.edu.

Both current CU Denver students and new transfer students are eligible to apply to the Criminal Justice BA/MCJ after meeting the following requirements:

- Currently enrolled in the School of Public Affairs as a Criminal Justice major
- Completed the University of Colorado Denver's undergraduate core curriculum
- Completed 60 credit hours
- Completed the following 12 credit hours in criminal justice:

Code	Title	Hours
CRJU 1000	Criminology and Criminal Justice: An Overview	3
CRJU 2041	Criminological Theory	3
CRJU 3100	Research Methods	3
CRJU 3150	Statistics for Criminal Justice	3
Total Hours		12

- Transfer Criminal Justice courses must have been approved and accepted toward the major
- Minimum 3.0 cumulative GPA
- Minimum 3.5 cumulative GPA in criminal justice courses

General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/general-graduation-requirements/>)
- CU Denver Undergraduate Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)
- School of Public Affairs Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/#graduationrequirements>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements

1. Students must complete a minimum of 30 resident credit hours, 21 of which must be in resident coursework.
2. Students must receive a minimum B grade in each required core MCJ course.
3. A minimum of 3.0 GPA overall is required in all graduate-level coursework.
4. Students must successfully complete an MCJ capstone or thesis.
5. Students must fulfill all college and major requirements.

6. Students are eligible to receive the Bachelor of Criminal Justice degree once they have successfully completed 120 credit hours and all CU Denver undergraduate degree requirements.
7. Students must seek full acceptance to the Graduate School and the MCJ program.
8. For competitive admission to the Graduate School and the MCJ program, students must have a minimum of a 3.0 CU cumulative grade point average in undergraduate Criminal Justice courses.
9. The MCJ will be conferred once the student has completed all requirements of the Master of Criminal Justice degree.
10. Application to the pathway program is completed after the student is already admitted to the University of Colorado Denver and meets the requirements as listed above. Students must have an established CU Denver cumulative GPA and major GPA before they can seek approval in the pathway program. Students will work with their undergraduate academic advisor in seeking approval to the pathway program, which includes a separate application than the one used for general admission to CU Denver.

Criminal Justice, MCJ

Introduction

Graduate School Policies and Procedures (p. 59) apply to this program. Nonresident students from western states may qualify for reduced tuition through the Western Regional Graduate Program.

Program Director: Lorine Hughes, PhD

The Master of Criminal Justice (MCJ) program is designed for students interested in comprehensive professional graduate education in criminology and criminal justice. It is intended to provide an in-depth understanding of existing structures, practices, and challenges within this field of study.

Part of an academic and professional field of study, the MCJ program prepares students to administer, analyze, evaluate, and facilitate improvements in the rationality and responsiveness of the criminal and juvenile justice systems. Research design capability is emphasized alongside skills required for analyzing empirical data and innovating in crime control and prevention. Students who advance through the program acquire strategies and skills necessary for promoting individual, organizational, and social change.

To learn more about our renowned faculty, please view their bios (<https://publicaffairs.ucdenver.edu/people/faculty/>) on the School of Public Affairs website.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 36 credit hours of approved coursework.
 - Of these 36 credit hours, students must complete a minimum of 27 credits hours of coursework within Criminal Justice (CRJU).

- Students must maintain at least a 3.00 cumulative GPA in this program.
- Students must earn at least a B- in all coursework to be accepted for graduate credit towards the degree.
- No more than 6 credit hours of Independent Study may be applied toward the degree.
- This program must be completed within 7 years.

Code	Title	Hours
Required Core Courses		15
CRJU 5001	Criminal Justice Systems, Policies, and Practice	
CRJU 5002	Criminological Theory	
CRJU 5003	Research Methods	
CRJU 5004	Statistics for Criminal Justice	
CRJU 5005	Law & Society	
Elective Courses		18
Students must complete six elective courses, including the Internship course, from a pre-approved list and/or with approval from the program director.		
CRJU 6910	Internship in Criminal Justice ¹	
Other Courses		3
Select one of the following:		
CRJU 5361	Capstone Seminar (during the final semester)	
CRJU 6950	Master's Thesis ²	
Total Hours		36

- ¹ Students who have not had one year of criminal justice experience following the awarding of their bachelor's degree will be required to complete CRJU 6910 Internship in Criminal Justice. A minimum of 240 hours of supervised work is required in order to earn 3 hours of credit. The internship requirement may only be waived with the permission of the MCJ Program Director. If required, the internship will count for 1 of the 6 elective courses. Students must complete 18 credit hours of MCJ coursework with at least a 3.00 cumulative GPA prior to enrolling in the internship course.

- ² With approval by and in consultation with the program director prior to enrolling in the course

Optional Concentrations

Students may select one of the concentrations below or complete the MCJ without a specified concentration. Students completing a concentration take their electives in the area of their concentration, complete the advanced seminar project in the area of their concentration, and are advised by faculty from the concentration.

Crime Analysis Concentration

The Crime Analysis concentration coursework emphasizes criminal justice and criminology related subjects; however, the analytic skills learned in this concentration are not industry-specific and easily can be transferred to non-criminal justice and criminology related fields.

Code	Title	Hours
Required Coursework		
CRJU 5003	Research Methods	3
CRJU 5004	Statistics for Criminal Justice	3
CRJU 5015	Intelligence Writing and Briefing	3
CRJU 5325	Qualitative Methods for Criminal Justice	3

CRJU 5331	Crime Analysis and GIS	3
Total Hours		15

Disaster, Hazards, and Emergency Management Concentration

The concentration in Disasters, Hazards, and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters, and community resilience. DHEM is designed for students who work or will work in the field of natural and man-made hazards, community resilience, and emergency management.

Code	Title	Hours
Required Coursework		
CRJU 5720	Public Policies for Hazards and Disasters	3
Select at least one of the following:		3
CRJU 5650	Public Service in Emergency Management and Homeland Security	
CRJU 5655	Principles of Emergency Management	
URPL 6645	Disaster/ClimateChangePlanning	
Electives		
Select two pre-approved elective courses. For a list of pre-approved electives, please consult your Academic Advisor.		6
Total Hours		12

Emergency Management and Homeland Security Concentration

The concentration in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters, and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security.

Code	Title	Hours
Required Coursework		
CRJU 5650	Public Service in Emergency Management and Homeland Security	3
Select at least one of the following:		3
CRJU 5655	Principles of Emergency Management	
CRJU 5720	Public Policies for Hazards and Disasters	
URPL 6645	Disaster/ClimateChangePlanning	
Select two pre-approved elective courses. For a list pre-approved electives, please consult your Academic Advisor.		6
Total Hours		12

Gender-Based Violence Concentration

The concentration in Gender-Based Violence (GBV) focuses on the management and policies surrounding gender-based violence, as well as grass-roots social justice work and best practices in this emerging field. Each fall, 10 to 20 students are accepted into the GBV cohort, allowing the participants to build a strong community of advocates and learners.

This program combines online courses with four intensive on-campus seminars spaced throughout the two-year program.

Code	Title	Hours
Required Coursework		
CRJU 5910	Nature and Scope of Interpersonal Violence	3
CRJU 5920	The Psychology of Interpersonal Violence	3
CRJU 5930	Interpersonal Violence Law and Public Policy	3
CRJU 5940	Interpersonal Violence Leadership, Advocacy, and Social Change	3
Total Hours		12

Public Administration, BA/MPA Introduction

The Pathway Bachelor of Arts in Public Administration (BAPA)/Master of Public Administration (MPA) degree allows high-performing students to earn both the Bachelor of Arts in Public Administration (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/public-affairs/public-administration-ba/>) and the Master of Public Administration (p. 505) degrees in an accelerated time frame, saving students both time and money. Students graduating with the Pathway BAPA/MPA degree are prepared for leadership and management roles in public service, including local, state, and federal governmental agencies and in nonprofit and nongovernmental organizations. Both the BAPA and the MPA degrees are offered fully online, providing students with the flexibility to schedule courses around the reality of family and work demands while also engaging both local and fully online students in public service opportunities in their own communities.

The BAPA/MPA degree program offered by the School of Public Affairs allows high-performing students to count 12 credit hours towards both the BAPA and the MPA degrees. Eligible students are those who have completed at least 75 credits with a minimum 3.5 GPA in the BAPA major and a 3.0 overall GPA, completed the undergraduate Core Curriculum, and who meet the other requirements listed below.

Students are eligible to receive the BAPA degree once they have successfully completed 120 semester hours and all CU Denver undergraduate degree requirements. The MPA will be conferred once the student has completed all requirements of the MPA degree.

Pathway Application

Both current CU Denver BAPA majors and new transfer students are eligible to apply to the BAPA/MPA Pathway program after meeting the following criteria:

- Currently enrolled in the School of Public Affairs as an undergraduate Public Administration major
- Completed the University of Colorado Denver's undergraduate core curriculum
- Completed at least 75 undergraduate credit hours
- Completed the following 15 credit hours in Public Administration or have a plan on when they will take each class:

Code	Title	Hours
PUAD 1001	Introduction to Leadership and Public Service	3
PUAD 2001	Management for Public Service	3
PUAD 3001	Financial Management for Public Service	3
PUAD 3002	Program Design, Evaluation, and Decision-Making	3

PUAD 4001	Ethics in Public Service	3
Total Hours		15

- All transfer courses must have been approved and accepted towards the major and degree at the time of application
- Minimum 3.0 cumulative GPA
- Minimum 3.5 cumulative GPA in the Public Administration major

Students do not apply for the pathway program at the time of application to CU Denver. Students will work with their assigned undergraduate academic advisor to apply for the pathway program after they have already matriculated to the university and have met the stated criteria.

BAPA/MPA Program Matriculation

After a student is admitted to the Pathway BAPA/MPA program, they will work with their assigned undergraduate academic advisor to enroll in MPA-level courses each semester. Students can complete up to 6 credit hours of MPA coursework each semester as an undergraduate and a maximum of 12 graduate semester credits can be completed as an undergraduate BAPA/MPA student overall. Students will continue to take undergraduate coursework while also completing graduate-level coursework.

Students in the Pathway BAPA/MPA program may be eligible to complete the MPA-level internship only after successfully passing two MPA-level courses. The MPA-level internship may fulfill both the BAPA and MPA internship requirement. The BAPA-level internship will not fulfill the MPA-level internship. Students must maintain a minimum 3.0 cumulative grade point average for all course work and a 3.5 grade point average for the BAPA major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/general-graduation-requirements/>)
- CU Denver Undergraduate Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)
- School of Public Affairs Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/school-public-affairs/#graduationrequirements>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements

1. Students must complete all CU Denver, School of Public Affairs, and Public Administration degree requirements to earn their Bachelor of Arts in Public Administration degree. The Bachelor of Arts in Public Administration is conferred once students meet all degree requirements.
2. Students seek full admission to the Master of Public Administration program during their final semester as an undergraduate student. This application is different than the one used to apply for the pathway program. Students must receive a minimum of a B- grade in

each required core MPA course, whether taken as an undergraduate or a graduate student.

3. Students must maintain a 3.0 GPA overall in all graduate-level courses.
4. In the MPA program students must successfully complete the MPA capstone or thesis.
5. Students must fulfill all college and major requirements.
6. The MPA will be conferred once the student has completed all requirements of the Master of Public Administration degree.
7. The School of Public Affairs reserves the right to rescind a BAPA/MPA student's admittance to the pathway program if at any point the student's grade point average falls below the requirements listed above.

Public Administration, MPA Introduction

Program Director: Robyn Mobbs, PhD

The Master of Public Administration (MPA) degree provides graduate professional education for students interested in public service leadership positions and careers with public and nonprofit agencies and organizations. The program serves students new to public service as well as those already in the field who are interested in furthering their careers.

To learn more about our renowned faculty, please visit our website to view our faculty bios (<https://publicaffairs.ucdenver.edu/people/faculty/>).

The School of Public Affairs offers three distinct ways to complete the MPA:

- Accelerated MPA
- Executive MPA
- Traditional MPA

Students pursuing the executive and traditional options may also choose to designate a concentration within one of the optional focus areas or complete the MPA without a specified concentration. Students in the accelerated format are not able to choose a concentration due to the cohort nature of the program and sequencing of classes; they can, however, pursue un-transcripted specializations.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats. The Accelerated MPA is offered in a cohort model, typically on campus; however, during the COVID-19 pandemic, courses are being delivered in other formats.

Program Requirements

- Students must successfully complete at least 36 credit hours of approved coursework (or 39 credit hours if the internship is required) for the Traditional and Accelerated MPA formats. Students must successfully complete at least 30 credit hours of approved coursework for the Executive MPA format.
- Students must maintain at least a 3.00 cumulative GPA in this program.

- Students must earn at least a B- in all core coursework and at least a C in all elective coursework to be accepted for graduate credit towards the degree.
- No more than 6 credit hours of Independent Study may be applied toward the degree.
- Students who have not had at least one year of professional work experience in the public or nonprofit sectors must complete an internship through an additional 3-semester-hour course, bringing their total semester-hour requirements to 39.
- This program must be completed within 6 years.

Code	Title	Hours
Core Courses		
All MPA students (with the exception of those in the Executive MPA option) must complete the following seven core courses or approved equivalents:		21
PUAD 5001	Introduction to Public Administration and Public Service	
PUAD 5002	Organizational Management and Behavior	
PUAD 5003	Research and Analytic Methods	
PUAD 5004	Economics and Public Finance ¹	
PUAD 5005	The Policy Process and Democracy	
PUAD 5006	Public Service Leadership and Ethics	
PUAD 5008	Evidence-Based Decision-Making	
Elective Courses		
Select four elective courses from a pre-approved list and/or with approval from the program director.		12
Internship		
PUAD 6910	Internship ²	3
Other Courses		
Select one of the following:		3
PUAD 5361	Capstone Seminar (during the final semester)	
PUAD 6950	Master's Thesis ³	
Total Hours		39

¹ Students in the Local Government Concentration must take PUAD 5503 Public Budgeting and Finance

² Internship: Students who have limited experience (generally defined as less than one year of experience) in public, nonprofit or relevant private-sector service must enroll in PUAD 6910 Internship. The decision to require PUAD 6910 Internship for a particular student is made by the faculty admissions committee or the student's faculty advisor upon the student's acceptance to the MPA program. A minimum of 300 hours of supervised work and study is required to earn the 3.00 credit hours for this course. The internship requirement raises the total credit hours needed to earn the MPA degree from 36 to 39.

³ Taken for 3 or 6 credits with approval by and in consultation with the program director prior to enrolling in the course.

MPA Options

In addition to the traditional MPA program, students may consider the accelerated and executive options.

Accelerated MPA

The Accelerated MPA (AMPA) is a fast-paced, full-time option that brings academically superior students together with a dedicated research and teaching faculty in the midst of the vibrant downtown Denver

environment. The students in the cohort enjoy a unique experience as they go through all classes in the MPA together, fostering a community of scholar-practitioners.

The AMPA option enables students to focus their energies on a concentrated program of study and earn a nationally accredited, 36-hour MPA in 12 months. All coursework is completed in-person as a cohort. The online option is not available for students in the AMPA program. Students in the AMPA program are not able to choose a concentration due to the cohort nature of the program and sequencing of classes; they can, however, pursue non-transcribed specializations.

Students are admitted to the program in cohorts of up to 20 participants. A new cohort starts each August. The cohort format helps to increase the opportunity to become acquainted with other graduate students and increases the opportunities for interaction between program participants and faculty. It is preferred that applicants have some knowledge of economics, statistics, and political science prior to starting the program, although this is not required.

The AMPA option is priced at a flat rate, regardless of in-state or out-of-state student status, providing out-of-state students with substantial savings. Students interested in pursuing the AMPA option should designate this as their desired program on their admissions application.

Executive MPA

The Executive MPA program is designed for senior-level professionals in the nonprofit and public sectors. The Executive MPA requires a minimum of 30 credit hours to complete the degree. Professional experience counts for two courses, leaving 10 courses to complete, as opposed to the 12 courses of the Accelerated or Traditional MPA options.

Initial Leadership Experience (3 credit hours)

All students will enroll in the Rocky Mountain Leadership Program (3 credit hours), which is a six-day seminar typically held in Breckenridge. The RMLP brings together public and non-profit professionals from across the country to collaborate on current management issues while honing leadership skills. Federal employees may elect the Office of Personnel Management's (OPM) federal Management Assessment Seminar at either the Western or Eastern Management Development Centers in lieu of the Rocky Mountain Leadership Program. For more information about the OPM program option please see www.leadership.opm.gov (<http://www.leadership.opm.gov>).

Coursework

Required courses (15 credit hours)

All students will complete PUAD 5001 Introduction to Public Administration and Public Service (3 credit hours) and PUAD 5002 Organizational Management and Behavior (3 credit hours) together as an Executive cohort. Both courses are held in a hybrid format, which combines a one-week intensive session on the Denver campus with additional online instruction. Students will also complete three additional core courses (9 total credit hours) from the regular MPA core. The remainder of the core courses may be taken in the student's preferred format as either online, weekend intensive, or through the traditional campus-based classroom setting.

Electives (9 credit hours)

In consultation with an advisor, students select three elective courses that best meet their professional goals. These may be taken online or in the classroom. Students may complete up to 9 credits through the federal OPM Management Development Center provided they are approved for graduate credit by the American Council on Education.

Capstone or Thesis (3 - 6 credit hours)

Students elect to take either PUAD 5361 Capstone Seminar (3 credit hours) or PUAD 6950 Master's Thesis (3 - 6 credit hours) during their final semester.

Optional Concentrations

Students in the Traditional and Executive MPA programs may select one of the concentrations below or complete the MPA without a specified concentration. Students completing a concentration take their electives in the area of their concentration, complete the advanced seminar project in the area of their concentration and are advised by faculty from the concentration.

All MPA concentrations require a total of 12 credits hours of concentrated elective coursework and may either be taken as part of the MPA program or as a stand-alone Graduate Certificate.

Disasters, Hazards and Emergency Management Concentration

The concentration in Disasters, Hazards, and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters, and community resilience. DHEM is designed for students who work or will work in the field of natural and man-made hazards, community resilience, and emergency management. The DHEM concentration requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
CRJU 5720	Public Policies for Hazards and Disasters	3
Select at least one of the following:		3
CRJU 5650	Public Service in Emergency Management and Homeland Security	
CRJU 5655	Principles of Emergency Management	
URPL 6645	Disaster/ClimateChangePlanning	
Elective Courses		
Select two additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director		6
CRJU/PUAD 5644	Environmental and Hazards Law	
PUAD 5130	Collaboration Across Sectors	
PUAD 5271	Managing Conflict and Change	
PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Total Hours		12

Education Policy Concentration

The concentration in Education Policy provides students with an understanding of how K-12 education is governed, financed and regulated in the United States. Students will become familiar with the interaction between federal, state, and local policies and with the context in which education policy is formulated and implemented. The Education Policy concentration requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
PUAD 5200	Education Policy	3
PUAD 5210	Education Finance	3
Elective Courses		
Select two additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director		6
PUAD 5110	Seminar in Nonprofit Management	
PUAD 5120	Nonprofits and Public Policy	
PUAD 5140	Nonprofit Financial Management	
PUAD 5170	Strategic Management for Nonprofit and Public Managers	
PUAD 5180	Social Entrepreneurship	
PUAD 5310	Policy Formulation & Implementation	
PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5460	Political Advocacy	
PUAD 5625	Local Government Management	
PUAD 5626	Local Government Politics and Policy	
PUAD 5628	Social Problems and Policies	
PUAD 6600	Special Topics: Public Administration (Education Systems Leadership and Policy Institute)	
Total Hours		12

Emergency Management and Homeland Security Concentration

The concentration in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters, and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security. The EMHS concentration requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
CRJU 5650	Public Service in Emergency Management and Homeland Security	3
Select at least one of the following:		3
CRJU 5655	Principles of Emergency Management	
CRJU 5720	Public Policies for Hazards and Disasters	
URPL 6645	Disaster/ClimateChangePlanning	
Elective Courses		
Select two additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director		6
CRJU 5510	Contemporary Issues in Law Enforcement	
CRJU/PUAD 5644	Environmental and Hazards Law	
ENVS 6200	Risk Assessment	
GEOG 5080	Introduction to GIS	
GEOG 5710	Disasters, Climate Change, and Health	
PUAD 5130	Collaboration Across Sectors	
PUAD 5271	Managing Conflict and Change	

PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Total Hours		12

Environmental Policy and Management Concentration

The concentration in Environmental Policy and Management provides an understanding of how our natural environment is governed and affected by relationships between various entities, including legislatures, administrative agencies, courts, government and more. The EPM concentration requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
Complete the following two courses:		6
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Elective Courses		
Select two additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director		6
COMM 5620	Health Risk Communication	
LDAR 5530	City Design Fundamentals	
LDAR 6686	Special Topics: Landscape Architecture	
PUAD 5410	Administrative Law	
PUAD 5420	Law and Public Policy	
PUAD 5628	Social Problems and Policies	
PUAD 5644	Environmental and Hazards Law	
PUAD 5650	Public Service in Emergency Management and Homeland Security	
PUAD 5740	Sustainable Energy Policy	
PUAD 6600	Special Topics: Public Administration (Environmental Justice and Crime)	
Total Hours		12

Gender-Based Violence Concentration

The concentration in Gender-Based Violence (GBV) focuses on the management and policies surrounding gender-based violence, as well as grass-roots social justice work and best practices in this emerging field. Each fall, 10 to 20 students are accepted into the GBV cohort, allowing the participants to build a strong community of advocates and learners. This program combines online courses with four intensive campus seminars spaced throughout the two-year program. The concentration in GBV requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
CRJU 5910	Nature and Scope of Interpersonal Violence	3
CRJU 5920	The Psychology of Interpersonal Violence	3
CRJU 5930	Interpersonal Violence Law and Public Policy	3
CRJU 5940	Interpersonal Violence Leadership, Advocacy, and Social Change	3
Total Hours		12

Local Government Concentration

The concentration in Local Government prepares students to become well-versed in the forces that shape the agendas of the public sector, including those of municipalities, counties, special districts, regional authorities, and councils of government. Additionally, students gain an understanding of government management and policy making. The concentration in Local Government requires a total of 12 credit hours.

Code	Title	Hours
Required Courses		
PUAD 5503	Public Budgeting and Finance	3
Select one of the following:		3
PUAD 5625	Local Government Management	
PUAD 5626	Local Government Politics and Policy	
PUAD 5628	Social Problems and Policies	
Elective Courses		
Select two additional elective courses from a list that has been approved in advance by the program director		6
PUAD 5130	Collaboration Across Sectors	
PUAD 5170	Strategic Management for Nonprofit and Public Managers	
PUAD 5220	Human Resource Management	
PUAD 5250	Intergovernmental Management	
PUAD 5260	Managing Diversity	
PUAD 5271	Managing Conflict and Change	
PUAD 5380	Citizen Participation: Theory and Practice	
PUAD 5410	Administrative Law	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5460	Political Advocacy	
PUAD 5502	Public Financial Management and Policy	
PUAD 5632	Seminar in Environmental Management	
PUAD 5650	Public Service in Emergency Management and Homeland Security	
Total Hours		12

Nonprofit Management Concentration

The concentration in Nonprofit Management prepares students to become innovative and critical thinkers in the areas of nonprofit organizational management and public policy, with a unique approach that bridges theoretical knowledge with real-world experience. As students prepare for their careers or advancement in their current positions, they gain insight into the interdependence between the nonprofit, public, and for-profit sectors. Graduates are able to span the boundaries of these three sectors to assess community needs, navigate the realm of public policy, and strategically and effectively manage organizations that ultimately benefit society. The Nonprofit Management concentration requires a total of 12 credit hours.

The School of Public Affairs' affiliation with the Nonprofit Leadership Alliance gives students the opportunity to earn the Certified Nonprofit Professional (<https://www.nonprofitleadershipalliance.org/>) (CNP) credential through completion of the Nonprofit Management concentration coursework, additional required extracurricular activities, and an examination. Contact cnpp@ucdenver.edu for more information about this credential.

Code	Title	Hours
Required Course		
PUAD 5110	Seminar in Nonprofit Management	3
Elective Courses		
Select three elective courses from a list that has been approved in advance by the program director		9
PUAD 5115	Effective Grant Writing for Nonprofit and Public Sector Managers	
PUAD 5120	Nonprofits and Public Policy	
PUAD 5125	Civil Society and Nongovernmental Organizations	
PUAD 5140	Nonprofit Financial Management	
PUAD 5150	Fundraising & Financial Resource Development	
PUAD 5160	Nonprofit Boards and Executive Leadership	
PUAD 5170	Strategic Management for Nonprofit and Public Managers	
PUAD 5180	Social Entrepreneurship	
Total Hours		12

Public Policy Analysis Concentration

The concentration in Public Policy Analysis provides training in the tools and skills needed to assess the impact of public policies and programs, including policy analysis, cost-benefit analysis, program evaluation, multivariate regression, and other analytical techniques. The Public Policy Analysis concentration requires a total of 12 credit hours.

Code	Title	Hours
Required Course		
PUAD 5320	Public Policy Analysis	3
Elective Courses		
Select three additional elective courses from the list below or select unlisted courses that have been approved in advance by the program director.		9
PUAD 5200	Education Policy	
PUAD 5310	Policy Formulation & Implementation	
PUAD 5330	Intermediate Statistical Analysis	
PUAD 5350	Program Evaluation	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5720	Public Policies for Hazards and Disasters	
Total Hours		12

Public Administration/Applied Geography and Geospatial Sciences, MPA/MA

Introduction

The dual Master of Public Administration/Master of Arts in Applied Geography and Geospatial Sciences degree offers students interested in working in the government or nonprofit sectors an opportunity to combine fundamental management and leadership training with highly sought-after skills in geospatial sciences, including geographic

information systems, remote sensing, computer cartography, and spatial statistics. This degree may be particularly appealing for students interested in working in areas such as environmental management, disasters and hazards mitigation and emergency management, urban affairs, and public health. The structure of the degree allows students to complete both programs in less time and for less money.

Program Requirements

- Students are required to take 19 courses, or 57 credit hours, to complete the dual degree.
- Students without pre-service experience in the government or nonprofit sectors will also be required to take a 3-credit internship course.
- Students must earn a minimum B- grade in each required course applied to satisfy degree requirements and must maintain a 3.0 cumulative GPA.
- For more detailed information about course sequencing and requirements, contact your advisor.

Code	Title	Hours
Core Courses		27
GEOG 5050	Applied Spatial Statistics	
GEOG 6300	Foundations Seminar in Human-Environmental Interaction	
PUAD 5001	Introduction to Public Administration and Public Service	
PUAD 5002	Organizational Management and Behavior	
PUAD 5003	Research and Analytic Methods	
PUAD 5004	Economics and Public Finance	
or PUAD 5503	Public Budgeting and Finance	
PUAD 5005	The Policy Process and Democracy	
PUAD 5006	Public Service Leadership and Ethics	
PUAD 5008	Evidence-Based Decision-Making	
Geospatial Science and Methods Elective Courses		
Select four of the courses below		12
CSCI 5559	Database Systems	
CVEN 5382	Geospatial Data Development	
CVEN 5383	GIS Analysis -- Theory and Practice	
CVEN 5385	GIS Relational Database Systems	
ENVS 6200	Risk Assessment	
ENVS 6220	Toxicology	
ENVS 6230	Environmental Epidemiology	
GEOG 5060	Remote Sensing I: Introduction to Environmental Remote Sensing	
GEOG 5070	Remote Sensing II: Advanced Remote Sensing	
GEOG 5081	Cartography and Computer Mapping	
GEOG 5085	GIS Applications for the Urban Environment	
GEOG 5090	Environmental Modeling with Geographic Information Systems	
GEOG 5091	Open Source Software for Geospatial Applications	
GEOG 5092	GIS Programming and Automation	
GEOG 5095	Deploying GIS Functionality on the Web	
GEOG 5235	GIS Applications in the Health Sciences	

Geography Elective Courses

Select three Geography elective courses ¹		9
Public Administration Elective Courses		
Select two Public Administration elective courses ¹		6
Internship		
PUAD 6910	Internship ²	3
Capstone		
PUAD 5361	Capstone Seminar	3
or GEOG 6800	Community-Based Research Practicum	
Total Hours		60

¹ Including at least one graduate-level Human Geography elective and at least one graduate-level Physical Geography elective, and two graduate-level Public Administration electives.

² Unless this requirement is waived by the program director because the student has more than one year of professional work experience in government or nonprofit organizations.

Public Administration/Criminal Justice, MPA/MCJ

Introduction

Master of Public Administration Program Director: Robyn Mobbs, PhD
Master of Criminal Justice Program Director: Lorine Hughes, PhD

The fields of public administration and criminal justice may intersect and complement one another. This dual-degree program provides students with the opportunity to focus on crime and criminal justice issues while learning administrative skills necessary for success in variety of public service settings.

Admission

Students interested in pursuing the dual-degree program must apply to and be admitted to each of the programs. Students admitted to one program may choose to apply to the other program at a later date. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) about how to apply on the School of Public Affairs website.

Program Requirements

Students enrolled in the dual-degree program must complete a total of 48 credit hours, including a minimum of 24 credit hours in each of the two programs (not counting Internship or Field Study if required). The total number of credit hours required to earn both degrees through this program is only 12 more than the total number of credit hours required for the Master of Public Administration (p. 505) or the Master of Criminal Justice (p. 503) by itself.

Interested students should contact the School of Public Affairs directly for specific information on course sequencing and requirements.

Public Administration/Economics, MPA/MA

Introduction

The fields of public administration and economics are inextricably linked. Economists provide much of the theory and analytic foundation that administrators use to evaluate and implement policy. Given that the

capital of Colorado is Denver, there is a great need for administrators that fully understand methods of program evaluation and have the theoretical background needed to forecast how individuals and institutions will respond to new proposals. Similarly, good theory and practice must take into account how the proposals will be implemented, and results interpreted. Both administrators and economists need to be engaged in constructive dialog in order to be fully effective.

Therefore, the Department of Economics of the College of Liberal Arts and Sciences and the School of Public Affairs jointly sponsor a dual-degree program. This program enables students to simultaneously earn a Master of Arts in Economics and a Master of Public Administration (MPA).

The dual-degree program provides students the opportunity to take the core courses of both programs and choose electives that best suit their career and personal goals. Electives in one program are allowed to count as an elective in the other. The net result is that while both degrees separately require 66 hours, the dual degree program provides a more comprehensive and effective education in 48 hours or 73 percent of the dual degree total.

Admission Into Both Programs

Students must apply separately to each program, meet the admission requirements of each program and be accepted by each program. If one program accepts a student for the dual-degree but the other program does not, then the student will not be accepted for the dual-degree. It is possible for students currently admitted to one program to learn about the dual-degree and choose to apply after admission to either economics or the School of Public Affairs.

Minimum Grade for Graduation

Students must maintain a GPA of 3.0 or higher across all courses that are applied to the dual degree. Students who fail to maintain a GPA of 3.00 will be placed on probation for a semester, after which they may be dropped from the dual degree program if the GPA is not increased to 3.0 or above. Additionally, any core course in which a student receives a final grade lower than B- cannot be counted toward the total credits required for the dual degree; in such a case, the student must retake the course.

Capstone Advising

All students are required to complete a capstone paper and obtain the signatures of three graduate faculty. Every dual-degree student, regardless of the capstone course they choose (ECON 6073 Research Seminar or PUAD 5361 Capstone Seminar) must select a committee composed of faculty from both programs.

Program Requirements

- Students must complete 48 semester hours, with 21 in economics and 27 in public administration
- A grade of B- or better is required in all core courses, with a B average overall. No public administration course may be taken a third time.
- No more than 6 hours may be transferred, and both SPA and economics program directors must approve any transfers.

Code	Title	Hours
Core Courses		
Take all of the courses listed below:		36
ECON 5073	Microeconomic Theory	
ECON 5083	Macroeconomic Theory	
ECON 5803	Mathematical Economics	

ECON 5813	Econometrics I
ECON 5823	Econometrics II
PUAD 5001	Introduction to Public Administration and Public Service
PUAD 5002	Organizational Management and Behavior
PUAD 5003	Research and Analytic Methods or PUAD 500 Economics and Public Finance or PUAD 550 Public Budgeting and Finance
PUAD 5005	The Policy Process and Democracy
PUAD 5006	Public Service Leadership and Ethics
PUAD 5008	Evidence-Based Decision-Making
ECON 6073	Research Seminar ¹ or PUAD 536 Capstone Seminar

Elective Courses

Students must complete 12 semester hours of electives 12

If the student takes PUAD 5361 Capstone Seminar, then they are required to take 6 semester hours of economics electives and 6 semester hours of electives from SPA labeled 5000-level or above.

If the student takes ECON 6073 Research Seminar, then they are required to take 3 semester hours of economics electives and 9 semester hours of electives from SPA labeled 5000-level or above.

Total Hours 48

¹ To be completed after all other core courses or with instructor and advisor consent

Public Administration/Juris Doctorate, MPA/JD

Introduction

The School of Public Affairs and the University of Colorado at Boulder School of Law jointly sponsor a dual degree program leading to the simultaneous granting of the Master of Public Administration (MPA) and Juris Doctor (JD) degrees. The program may be of particular interest to students who wish to practice law within the public sector, obtain a senior administrative post, represent public-sector clients, represent private-sector clients in transactions with government agencies and institutions and/or develop scholarly expertise in the relationship between law and public administration.

Interested persons must separately apply to and be admitted by both SPA and the School of Law. Upon admission, students may begin full-time study at either SPA or the School of Law; however, law study must be initiated no later than the beginning of the second year of enrollment in the program, and the first year of law study must be taken in its entirety and exclusive of non-law course work.

Through the choice of electives, students may develop a limited substantive specialization within the study of law and public administration. The dual degree program is structured to allow for 12 semester hours from the law school to be accepted as electives in the 36-semester-hour MPA program, and 12 semester hours from SPA to be accepted into the law school's 89-semester-hour JD program. Students are thus simultaneously awarded both degrees with a cumulative total of 101 semester hours; the program therefore allows students to complete all dual degree requirements in approximately four years of full-time study. Students without prior public-sector work experience will be

required to complete an internship in an appropriate governmental institution or closely related nonprofit organization.

Public Administration/Public Health, MPA/MPH

Introduction

Students must apply to and be admitted into both the Master of Public Administration (MPA) and the Master of Public Health (MPH) programs in order to participate in the dual-degree program. The Colorado School of Public Health has a separate application for the Master of Public Health program. Students should indicate intention to complete the dual degree upon application to the School of Public Affairs and simultaneously complete the application for the School of Public Health. The School of Public Affairs does not have a limit on the number of students who can enroll. Students already enrolled in the School of Public Affairs student may begin the Colorado School of Public Health application right away (see the SPH (<http://catalog.ucdenver.edu/cu-anschutz/schools-colleges-programs/colorado-school-public-health/>) website for application deadlines), while taking MPA classes. It is best to get started on the application process right away, so that advising matches graduation goals. Once admitted to the dual-degree program, students will be supported by an advisor from each school.

Program Requirements

To complete the dual degree, students will take:

- all the core courses in each program
- 6 elective credits from the School of Public Affairs
- 12 elective credits from the School of Public Health
- The School of Public Health's capstone course requirements

Total credits required: 60 semester credit hours.

Public Administration/Urban and Regional Planning, MPA/MURP

Introduction

Public administration and urban and regional planning have many aspects in common. To provide students with an excellent education through an understanding of both professions, the School of Public Affairs and the College of Architecture and Planning have developed a dual degree program. Students can obtain both the Master of Public Administration (MPA) and the Master of Urban and Regional Planning (MURP) degrees with a minimum of 66 semester hours, as compared to a total of 87 semester hours to complete both degrees independently.

To be eligible for the dual MPA/MURP degree program, students must be admitted to each of the two schools under their respective admission procedures and standards and indicate an intention to pursue the dual degree. Students will take all the core courses and the capstone required for an MPA, plus the core and concentration requirements necessary for the MURP.

Students in each school must apply to the other school before completing 18 hours in their respective programs. Upon admission to both schools, students will be assigned an advisor in each school to work out a specific degree plan.

Core and Elective Requirements

Code	Title	Hours
Core MURP Courses		27
URPL 5000	Planning History and Theory	
URPL 5020	Planning Law and Institutions	
URPL 5030	Planning Practice and Technology	
URPL 5040	Urban Sustainability	
URPL 5050	Urban Development	
URPL 5060	Planning Workshop	
URPL 6000	Planning Project Studio	
Core MPA Courses		18
PUAD 5001	Introduction to Public Administration and Public Service	
PUAD 5002	Organizational Management and Behavior	
PUAD 5004	Economics and Public Finance	
	or PUAD 550 Public Budgeting and Finance	
PUAD 5005	The Policy Process and Democracy	
PUAD 5006	Public Service Leadership and Ethics	
PUAD 5008	Evidence-Based Decision-Making	
Take one of the two courses below:		3
PUAD 5003	Research and Analytic Methods	
URPL 5010	Planning Methods	
Additional Coursework		
<i>MURP</i>		
9 hours if URPL 5010 elected, or 12 hours if PUAD 5003 elected.		9-12
Courses are to be selected with MURP advisor's approval.		
PUAD 5003	Research and Analytic Methods	
URPL 5040	Urban Sustainability	
<i>MPA</i>		
3 hours if PUAD 5003 elected, or 6 hours if URPL 5010 elected.		3-6
PUAD 5003	Research and Analytic Methods	
URPL 5040	Urban Sustainability	
Practicum		
PUAD 5361	Capstone Seminar	3
Electives		
Select one of the following or another option with MPA advisor's approval		3
PUAD 5250	Intergovernmental Management	
PUAD 5410	Administrative Law	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5502	Public Financial Management and Policy	
PUAD 5503	Public Budgeting and Finance	
PUAD 5540	Organization Development	
PUAD 5625	Local Government Management	
PUAD 5626	Local Government Politics and Policy	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Total Hours		66-72

Public Affairs, PhD

Introduction

Graduate School Policies and Procedures (p. 59) apply to this program.

Program Director: Deserai Crow, PhD

The Doctor of Philosophy in Public Affairs program addresses the demand for scholarship in public administration, public policy, public management, and criminal justice/criminology. The program develops the conceptual, research, and analytic skills and knowledge of its students so that they will be able to advance the study and practice of public affairs in their subsequent careers. The PhD prepares its graduates for positions in academia and consulting firms, public management and administration, public policy analysis, politics and advocacy, and nonprofits.

Time Required for the PhD Degree

The PhD program requires an intense commitment. Most core courses are offered during the late afternoon or early evenings. On average, students take 4 to 6 years to complete all of the requirements for the PhD.

PhD Application Requirements

Applicants must submit the following items before they can be considered for admission. The application deadline is February 1 for domestic applicants and January 15 for international applicants. Admitted students usually begin in the fall semester.

- Application form
- Official transcripts (two copies) from all degree-granting institutions
- GRE scores (no more than five years old)
- A resume or curriculum vita
- Three letters of reference attesting to a candidate's academic promise
- A well-articulated statement of purpose demonstrating an understanding of the research orientation of the degree and a strong motivation and determination to successfully complete the program

All these items are taken into consideration in admitting applicants into the PhD Program.

Applicants whose native language is not English are required to submit TOEFL or IELTS scores. This requirement may be waived for applicants who have completed a baccalaureate or graduate-level degree program at an English-speaking college or university. In addition, applicants whose native language is not English might be required to participate in an oral interview.

Financial Assistance

The School of Public Affairs will fund a small number of doctoral research assistantships each year based on financial availability and qualifications of the applicant.

Program Requirements

- Students must complete a total of 30 credit hours of coursework and 30 credit hours of dissertation work.
- Students may complete the degree full time or part time.
- Students may transfer 3 elective credits from a prior graduate degree.
- This program must be completed within 8 years.

Code	Title	Hours
Required Courses		30
PUAD 8010	Historical and Comparative Foundations of Public Administration	
PUAD 8020	Seminar in Public Management	
PUAD 8030	Seminar in Public Policy	
PUAD 8040	Seminar In Economic and Institutional Foundations of Public Affairs	
PUAD 8050	Quantitative Methods I	
PUAD 8060	Seminar On The Conduct Of Empirical Inquiry	
PUAD 8070	Quantitative Methods II	
An approved qualitative methods course (3 credits)		
Approved graduate-level electives (6 credits)		
Upon completion of the coursework and the comprehensive exam, students complete 30 hours of dissertation credit		30
PUAD 8990	Doctoral Dissertation	
Total Hours		60

Comprehensive Exam, Dissertation Proposal, and Dissertation

PhD students must take and pass the comprehensive exam immediately following the completion of their core courses. Admission to candidacy (advanced to candidacy) occurs after completing in a satisfactory manner all of their coursework, passing the comprehensive examination unconditionally, and achieving a grade point average of 3.33 in doctoral coursework. Soon after they have advanced to candidacy, students must defend a dissertation proposal. Upon completing their research, students must defend their dissertation.

Questions

Applicants are encouraged to contact Dr. Deserai Crow, Director of the PhD Program, at deserai.crow@ucdenver.edu.

Crime Analysis Graduate Certificate

Introduction

Students can earn the Graduate Certificate in Crime Analysis by successfully completing 15 credit hours of approved coursework. Anyone who has completed a bachelor's degree from an accredited university is eligible to enroll in the program. The certificate emphasizes topics in Criminal Justice and Criminology, but the analytic skills learned in the certificate training can be easily transferred to other fields.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 15 credit hours of approved coursework.

- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Courses		
CRJU 5003	Research Methods	3
CRJU 5004	Statistics for Criminal Justice	3
CRJU 5015	Intelligence Writing and Briefing	3
or ENGL 5175	Writing in the Sciences	
CRJU 5325	Qualitative Methods for Criminal Justice	3
or PUAD 5007	Qualitative Research Methods	
CRJU 5331	Crime Analysis and GIS	3
Total Hours		15

Disasters, Hazards, and Emergency Management (DHEM) Graduate Certificate

Introduction

The Graduate Certificate in Disasters, Hazards, and Emergency Management (DHEM) provides advanced education in the management of emergencies, hazards, disasters, and community resilience. The DHEM program is designed to meet the needs of students who wish to work, or are currently working, in the field of natural and man-made hazards, community resilience, and emergency management.

The DHEM certificate applies an interdisciplinary approach to education that:

- Emphasizes high-level skills of critical thinking, learning, adaptation and policy analysis
- Focuses on the all-hazards emergency management model (encompassing natural and man-made hazards, such as wildfires, hurricanes, technological or industrial risks), and community resilience.

Students completing the DHEM graduate certificate program will have the knowledge and skills necessary to assess and manage a broad range of hazards and disasters, and to understand the policy and managerial environment in which emergency management occurs. Professionals who would like to supplement their work experience with classes in this area may also find the certificate helpful for their professional goals.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.

- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Courses		
CRJU/PUAD 5720	Public Policies for Hazards and Disasters	3
Select one core course of the following:		
CRJU/PUAD 5650	Public Service in Emergency Management and Homeland Security	3
CRJU/PUAD 5655	Principles of Emergency Management	
URPL 6645	Disaster/ClimateChangePlanning	
Elective Courses		
Select two elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:		
CRJU/PUAD 5644	Environmental and Hazards Law	6
PUAD 5130	Collaboration Across Sectors	
PUAD 5271	Managing Conflict and Change	
PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Total Hours		12

Education Policy Graduate Certificate Introduction

The Graduate Certificate in Education Policy provides students with an understanding of how K-12 education is governed, financed, and regulated in the United States. Students will become familiar with the interaction between federal, state, and local policies and with the context in which education policy is formulated and implemented.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Courses		
PUAD 5200	Education Policy	3
PUAD 5210	Education Finance	3
Elective Courses		
Select two elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:		
PUAD 5110	Seminar in Nonprofit Management	
PUAD 5120	Nonprofits and Public Policy	
PUAD 5140	Nonprofit Financial Management	
PUAD 5170	Strategic Management for Nonprofit and Public Managers	
PUAD 5180	Social Entrepreneurship	
PUAD 5310	Policy Formulation & Implementation	
PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5460	Political Advocacy	
PUAD 5625	Local Government Management	
PUAD 5626	Local Government Politics and Policy	
PUAD 5628	Social Problems and Policies	
PUAD 6600	Special Topics: Public Administration (Education Systems Leadership and Policy Institute)	
Any graduate-level course offered by the School of Education and Human Development, with the approval of the concentration director		
Total Hours		12

Emergency Management and Homeland Security (EMHS) Graduate Certificate Introduction

The Graduate Certificate in Emergency Management and Homeland Security (EMHS) provides advanced education in the management of emergencies, hazards, disasters, and homeland security. The EMHS program is designed to meet the needs of students who wish to work, or are currently working, in the field of emergency management and homeland security.

The EMHS program applies an interdisciplinary approach to education that:

- Emphasizes high-level skills of critical thinking, learning, adaptation and policy analysis
- Focuses on the all-hazards emergency management model (encompassing natural hazards, technological hazards, and terrorism).

Students completing the EMHS certificate program will have the knowledge and skills necessary to assess and manage a broad range of hazards and disasters, and to understand the policy environment in which emergency management occurs. Professionals who would like to supplement their work experience with classes in this area may also find the certificate helpful for their professional goals.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Course		
CRJU/PUAD 5650	Public Service in Emergency Management and Homeland Security	3
Core Course		
Select one of the following:		3
CRJU/PUAD 5655	Principles of Emergency Management	
CRJU/PUAD 5720	Public Policies for Hazards and Disasters	
URPL 6645	Disaster/ClimateChangePlanning	
Elective Courses		
Select two of the following or select unlisted courses that have been approved in advance by the concentration director:		6
CRJU 5510	Contemporary Issues in Law Enforcement	
CRJU/PUAD 5644	Environmental and Hazards Law	
ENVS 6200	Risk Assessment	
GEOG 5080	Introduction to GIS	
GEOG 5710	Disasters, Climate Change, and Health	
PUAD 5130	Collaboration Across Sectors	
PUAD 5271	Managing Conflict and Change	
PUAD 5320	Public Policy Analysis	
PUAD 5350	Program Evaluation	
PUAD 5440	Negotiation and Conflict Resolution	
PUAD 5631	Seminar in Environmental Politics and Policy	
PUAD 5632	Seminar in Environmental Management	
Total Hours		12

Environmental Policy And Management (EPM) Graduate Certificate

Introduction

The Graduate Certificate in Environmental Policy and Management provides an understanding of how our natural environment is governed and affected by relationships between various entities, including

legislatures and administrative agencies at all levels of government; courts; nonprofit and private sectors; community groups and the public.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Courses		
PUAD 5631	Seminar in Environmental Politics and Policy	3
PUAD 5632	Seminar in Environmental Management	3
Elective Courses		
Select two elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:		6
COMM 5620	Health Risk Communication	
LDAR 5530	City Design Fundamentals	
LDAR 6686	Special Topics: Landscape Architecture	
PUAD 5410	Administrative Law	
PUAD 5420	Law and Public Policy	
PUAD 5628	Social Problems and Policies	
PUAD 5644	Environmental and Hazards Law	
PUAD 5650	Public Service in Emergency Management and Homeland Security	
PUAD 5740	Sustainable Energy Policy	
PUAD 6600	Special Topics: Public Administration (Environmental Justice and Crime)	
Total Hours		12

Gender-Based Violence (GBV) Graduate Certificate

Introduction

The Graduate Certificate in Gender-Based Violence (GBV) provides an interdisciplinary perspective on crime, the formulation of laws and codes, and the criminal legal system and its intersection with gender and violence. Courses within the GBV Graduate Certificate are conducted in the hybrid format. All four of the GBV courses will meet in-person for a one-week intensive session followed by online instruction for the remainder of the semester.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/>)

prospective-and-admitted-students/admission/) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Courses		
CRJU/PUAD 5910	Nature and Scope of Interpersonal Violence	3
CRJU/PUAD 5920	The Psychology of Interpersonal Violence	3
CRJU/PUAD 5930	Interpersonal Violence Law and Public Policy	3
CRJU/PUAD 5940	Interpersonal Violence Leadership, Advocacy, and Social Change	3
Total Hours		12

Interpersonal Violence and Health Care Graduate Certificate

Introduction

The Graduate Certificate in Interpersonal Violence and Health Care (CIVHC) fulfills a nationally recognized need to educate and train individuals from a broad range of health disciplines to effectively respond to victims of interpersonal violence. CIVHC is a program of the Center on Domestic Violence in CU Denver's School of Public Affairs, developed in collaboration with local and national advisors representing schools of nursing, medicine and dentistry, as well as knowledgeable health practitioners skilled in meeting the needs of patients experiencing interpersonal violence. CIVHC is the first graduate-level program of its kind. As a distance learning program, it represents a collaboration within the University of Colorado system-the Downtown Campus, the Anschutz Medical Campus and the Colorado Springs Campus. Its goal is to provide education for health professionals, faculty and students, thereby building proficiency and confidence in interpersonal violence prevention, identification and intervention in Colorado and the nation.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

At the completion of this certificate program, participants will have:

- Leadership skills necessary to improve systematic responses to interpersonal violence in health care settings
- Thorough understanding of the health ramifications of interpersonal violence

- Skill and comfort with screening all patients for interpersonal violence-victims, offenders and child witnesses
- Ability to effectively assess and treat adults and children engaged in violent relationships
- Ability to build resources to meet the needs of patients including, but not limited to, collaboration with community-based providers.

Four courses are required for completion of this certificate.

Please contact the Director of the Center on Domestic Violence at barb.paradiso@ucdenver.edu for more information.

Local Government Graduate Certificate

Introduction

Local government is the most rapidly growing area of public sector employment across the country, providing jobs in municipalities, counties, special districts, regional authorities, and councils of government.

The Graduate Certificate in Local Government allows students to become well-versed in the forces that shape the agendas of these organizations and gain an understanding of government management and policy making.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Course		
PUAD 5503	Public Budgeting and Finance	3
Core Courses		
Select one of the following:		3
PUAD 5625	Local Government Management	
PUAD 5626	Local Government Politics and Policy	
PUAD 5628	Social Problems and Policies	
Elective Courses		
Select two elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director:		6
PUAD 5130	Collaboration Across Sectors	
PUAD 5170	Strategic Management for Nonprofit and Public Managers	
PUAD 5220	Human Resource Management	

PUAD 5250	Intergovernmental Management
PUAD 5260	Managing Diversity
PUAD 5271	Managing Conflict and Change
PUAD 5380	Citizen Participation: Theory and Practice
PUAD 5410	Administrative Law
PUAD 5440	Negotiation and Conflict Resolution
PUAD 5460	Political Advocacy
PUAD 5502	Public Financial Management and Policy
PUAD 5632	Seminar in Environmental Management
PUAD 5650	Public Service in Emergency Management and Homeland Security
Total Hours	12

Nonprofit Management Graduate Certificate

Introduction

The Graduate Certificate in Nonprofit Management prepares students to become innovative and critical thinkers in the areas of nonprofit organizational management and public policy, with a unique approach that bridges theoretical knowledge with real-world experience. As students prepare for their careers or advancement in their current positions, they gain insight into the interdependence between the nonprofit, public, and for-profit sectors. Graduates are able to span the boundaries of these three sectors to assess community needs, navigate the realm of public policy, and strategically and effectively manage organizations that ultimately benefit society.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

The School of Public Affairs' affiliation with the Nonprofit Leadership Alliance gives students the opportunity to earn the Certified Nonprofit Professional (<https://www.nonprofitleadershipalliance.org/cnpexam/>) (CNP) credential through completion of the Nonprofit Management graduate certificate coursework, additional required extracurricular activities, and an examination. Contact cnp@ucdenver.edu for more information about this credential.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 12 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Required Course		
PUAD 5110	Seminar in Nonprofit Management	3
Elective Courses		

Students must complete three elective courses from the list below or select unlisted courses that have been approved in advance by the concentration director.

PUAD 5115	Effective Grant Writing for Nonprofit and Public Sector Managers
PUAD 5120	Nonprofits and Public Policy
PUAD 5125	Civil Society and Nongovernmental Organizations
PUAD 5140	Nonprofit Financial Management
PUAD 5150	Fundraising & Financial Resource Development
PUAD 5160	Nonprofit Boards and Executive Leadership
PUAD 5170	Strategic Management for Nonprofit and Public Managers
PUAD 5180	Social Entrepreneurship

Public Policy Analysis Graduate Certificate

Introduction

The Graduate Certificate in Public Policy Analysis provides an understanding of the context in which public policies are formulated, implemented, and evaluated. Graduates will have training in the tools and skills needed to assess the impact of public policies and programs, including policy analysis, cost-benefit analysis, program evaluation, multivariate regression, and other analytical techniques.

Prospective students who wish to pursue this certificate must apply as non-degree applicants. Learn more (<https://publicaffairs.ucdenver.edu/prospective-and-admitted-students/admission/>) on the School of Public Affairs admission web page.

Program Delivery

- Courses are offered on campus, online, and in remote and hybrid formats.

Program Requirements

- Students must successfully complete 15 credit hours of approved coursework.
- Students must maintain at least a 3.00 cumulative GPA in this program.
- This program must be completed within 7 years.

Code	Title	Hours
Core Courses		
PUAD 5004	Economics and Public Finance	3
PUAD 5005	The Policy Process and Democracy	3
PUAD 5320	Public Policy Analysis	3
Elective Courses		
Select two additional elective courses from the list below or select unlisted courses that have approved in advance by the program director.		6
PUAD 5200	Education Policy	
PUAD 5310	Policy Formulation & Implementation	
PUAD 5330	Intermediate Statistical Analysis	
PUAD 5350	Program Evaluation	

PUAD 5631	Seminar in Environmental Politics and Policy
PUAD 5720	Public Policies for Hazards and Disasters
Total Hours	15

Graduate Programs A-Z

Graduate Programs

A

- Accounting, MS (p. 108)
- Administrator License - Executive Leadership Program (p. 446)
- Anthropology, MA (p. 240)
- Applied Econometrics and Data Analytics Graduate Certificate (p. 272)
- Applied Geography & Geospatial Science, MA (p. 300)
- Applied Mathematics, MS (p. 360)
- Applied Mathematics, PhD (p. 362)
- Applied Measurement Certificate (p. 461)
- Applied Statistical Modeling Certificate (p. 461)
- Applied Statistics Graduate Certificate (p. 366)
- Architecture, MArch (p. 139)

B

- Bioengineering Dual, MS-MBA (p. 186)
- Bioengineering, MD-MS (p. 186)
- Bioengineering, MD-PhD (p. 186)
- Bioengineering, MS (p. 186)
- Bioengineering, PhD (p. 186)
- Bioinnovation and Entrepreneurship Certificate (p. 126)
- Biology, MS (p. 346)
- Business Administration - Health Administration, MBA (p. 109)
- Business Administration, MBA (p. 110)
- Business Administration/Business, MBA/MS (p. 114)
- Business Administration/Medicine, MBA/MD (p. 114)
- Business Administration/Urban and Regional Planning, MBA/MURP (p. 114)
- Business Administration: One Year MBA (p. 114)
- Business Analytics, MS (p. 116)
- Business/Business, MS/MS (p. 116)

C

- Chemistry, MS (p. 247)
- Civil Engineering, MS and MEng (p. 197)
- Civil Engineering, PhD (p. 198)
- Classroom Assessment Certificate (p. 461)
- Commodities Certificate (p. 126)
- Communication, MA (p. 255)
- Computer Science and Information Systems, PhD (p. 211)
- Computer Science, MS (p. 212)
- Construction Project Management Graduate Certificate (p. 199)
- Counseling, MA (p. 421)
- Couple, Marriage and Family Therapy, MA (p. 422)
- Crime Analysis Graduate Certificate (p. 513)

- Criminal Justice, BA/MCJ (p. 502)
- Criminal Justice, MCJ (p. 503)
- Critical Pedagogy, MA (p. 430)
- Culturally and Linguistically Diverse Bilingual Specialist Endorsement (p. 429)
- Culturally and Linguistically Diverse Education Endorsement: K-12 (p. 429)
- Culturally and Linguistically Diverse Education with K-12 Endorsement, MA (p. 427)
- Culturally and Linguistically Diverse Education, MA (p. 426)
- Culturally and Linguistically Diverse Education, MA with Bilingual Specialist Endorsement (p. 428)
- Culturally and Linguistically Diverse Education, MA with K-12 Endorsement & Bilingual Specialist Endorsement (p. 427)
- Cybersecurity and Defense Graduate Certificate (p. 213)

D

- Design Build Graduate Certificate (p. 170)
- Digital Studies Certificate (p. 249)
- Disasters, Hazards, and Emergency Management (DHEM) Graduate Certificate (p. 513)

E

- Early Childhood Education, MA (p. 439)
- Early Childhood Special Education Specialist Endorsement (p. 440)
- Early Childhood Special Education Specialist Licensure (p. 441)
- Early Literacy Certificate (p. 468)
- Economics MA/Applied Mathematics MS Dual Degree, with a Focus in Applied Statistics (p. 257)
- Economics MA/Finance MS Dual Degree (p. 259)
- Economics MA/Public Administration MPA Dual Degree (p. 260)
- Economics, MA (p. 271)
- Education and Human Development, PhD (p. 431)
- Education Policy Graduate Certificate (p. 514)
- Electrical Engineering, MEng (p. 222)
- Electrical Engineering, MS (p. 222)
- Emergency Management and Homeland Security (EMHS) Graduate Certificate (p. 514)
- Engineering and Applied Science, PhD (p. 223)
- English, MA (p. 279)
- Entrepreneurship Certificate (p. 127)
- Environmental Policy And Management (EPM) Graduate Certificate (p. 515)
- Environmental Science Education Graduate Certificate (p. 306)
- Environmental Sciences, MS (p. 302)
- Ethnic Studies Graduate Certificate (p. 286)
- Executive MBA in Health Administration (p. 116)

F

- Finance and Risk Management, MS (p. 117)
- Finance/Economics, MS/MA (p. 118)
- Free and Open Source Software for Geospatial Applications Graduate Certificate (p. 307)

G

- Gender-Based Violence (GBV) Graduate Certificate (p. 515)
- Geographic Information Science Graduate Certificate (p. 309)
- Geographic Information Systems and Geomatics Graduate Certificate (p. 200)
- Geography, Planning, and Design, PhD (p. 163)
- Geospatial Information Science Graduate Certificate (p. 170)
- Global Energy Management, MS (p. 118)
- Global History Graduate Certificate (p. 330)
- Graduate Certificate in Risk Management (p. 127)

H

- Health and Behavioral Sciences, PhD (p. 315)
- Health Economics and Outcomes Research Graduate Certificate (p. 273)
- Health Economics, MS (p. 269)
- Health Economics, PhD (p. 270)
- Historic Preservation Certificate (p. 171)
- Historic Preservation, MS (p. 166)
- History, MA (p. 323)
- Human-Centered Design and Innovation Graduate Certificate (p. 227)
- Humanities, MH (p. 334)

I

- Information Systems, MS (p. 119)
- Instructional Technology Specialist Endorsement (p. 456)
- Integrated Construction, Management + Leadership Graduate Certificate (p. 172)
- Integrated Sciences, MIS (p. 340)
- Integrative and Systems Biology, PhD (p. 347)
- International Business, MS (p. 120)
- Interpersonal Violence and Health Care Graduate Certificate (p. 516)

L

- Labor Leadership Certificate (p. 389)
- Landscape Architecture, MLA (p. 147)
- Leadership for Educational Equity, EdD (p. 433)
- Leadership for Educational Organizations - Principal Licensure, MA (p. 446)
- Leadership for Educational Organizations with Principal Licensure, EdS (p. 446)
- Leadership for Learning Design and Technology Certificate (p. 455)
- Leadership: P-12 Library Programs Certificate (p. 455)
- Learning Design and Technology, MA (p. 454)
- Learning Experience Design Certificate (p. 455)
- Learning, Developmental and Family Sciences, MA (p. 450)
- Literacy and Language Development for Diverse Learners Certificate (p. 468)
- Literacy Education in English Education, MA (p. 466)
- Literacy Education with Reading Teacher K-12 Endorsement, MA (p. 467)

- Literacy Education, MA (p. 466)
- Local Government Graduate Certificate (p. 516)

M

- Management and Organization, MS (p. 122)
- Marketing, MS (p. 123)
- Master in Business Administration for Executives, MBA (p. 125)
- Mathematical Content Knowledge for Teaching, Graduate Certificate (p. 484)
- Mathematics Education, MEd (p. 482)
- MBA/MS in Bioengineering (p. 125)
- Mechanical Engineering, MEng (p. 232)
- Mechanical Engineering, MS (p. 232)
- Media Forensics, MS (p. 178)
- Middle School Math Endorsement (p. 484)

N

- New Directions in Public, Non-Profit and Community Leadership, Political Science, MA (p. 384)
- Nonprofit Management Graduate Certificate (p. 517)

O

- Online Teaching and Learning Certificate (p. 456)
- Open Digital Education Certificate (p. 456)

P

- Political Science MA / Master of Business Administration (MBA) Dual Degree (p. 388)
- Political Science, MA (p. 386)
- Post-Graduate Certificates (p. 128)
- Principal Licensure (p. 447)
- Program Evaluation Certificate (p. 462)
- Psychology, Clinical Health Psychology, PhD (p. 396)
- Public Administration, BA/MPA (p. 504)
- Public Administration, MPA (p. 505)
- Public Administration/Applied Geography and Geospatial Sciences, MPA/MA (p. 509)
- Public Administration/Criminal Justice, MPA/MCJ (p. 510)
- Public Administration/Economics, MPA/MA (p. 510)
- Public Administration/Juris Doctorate, MPA/JD (p. 511)
- Public Administration/Public Health, MPA/MPH (p. 511)
- Public Administration/Urban and Regional Planning, MPA/MURP (p. 511)
- Public Affairs, PhD (p. 512)
- Public History, MA in History (p. 328)
- Public Policy Analysis Graduate Certificate (p. 517)
- Public, Nonprofit and Community Leadership Graduate Certificate (p. 390)

R

- Reading Teacher K-12 Endorsement (p. 468)
- Recording Arts, MSRA (p. 180)
- Research and Evaluation Methods, MA (p. 460)

S

- School Psychology, PsyD (p. 472)
- Social Science, MSS (p. 401)
- Sociology, MA (p. 408)
- Software Engineering Graduate Certificate (p. 214)
- Spanish, MA (p. 375)
- Special Education Generalist Endorsement Only (p. 477)
- Special Education with Applied Behavior Analysis Emphasis, MA (p. 476)
- Special Education with Special Education Generalist (Ages 5-21) Endorsement, MA (p. 477)
- Special Education, MA (p. 475)
- Statistics, MS (p. 364)
- STEM Education with a concentration in Math and Science Education, MA (p. 483)
- STEM Education with a concentration in Mathematics Education, MA (p. 482)
- STEM Education with a concentration in Science Education, MA (p. 483)
- Strategic Communication Graduate Certificate (p. 256)
- Sustainability Certificate (p. 128)
- Sustainable Urban Agriculture Graduate Certificate (p. 310)

T

- Taxation, MS (p. 125)
- Teacher Librarian Endorsement (p. 454)
- Teaching College-level Language and Literacy Certificate (p. 281)
- Teaching College-Level Literature and Film Graduate Certificate (p. 282)
- Teaching English Language Learners Graduate Certificate (CTELL) (p. 283)
- Teaching for Cultural and Linguistic Diversity (TCLD) Certificate (p. 430)
- Teaching, MA (p. 485)

U

- U.S. History Graduate Certificate (p. 330)
- Urban and Regional Planning, MURP (p. 157)
- Urban Design, MUD (p. 167)

W

- Women's and Gender Studies Graduate Certificate (p. 413)

Graduate Courses A-Z

Catalog Course Definitions

Cross-Listed – Class that is offered along with another class that has the same topic, title, and course content. Max Hours displayed for each cross-listed class is the total number of hours allowed for all courses completed within a particular cross-listed group. *See below for more information on Max Hours.*

Max Hours (in Course Description) – Total number of applicable credit hours that count toward a student's degree for a particular course or cross-listed group.

Requisite:

- **Prerequisite** – Specific course completed or "in progress" (i.e. ENGL 1020 Core Composition I or ENGL 1020 Core Composition I with C- or higher)
- **Corequisite** – Specific course taken at the same time (i.e. ENVS 1044 Introduction to Environmental Sciences taken same time as ENVS 1045 Introduction to Environmental Sciences Laboratory)
- **Restriction** – Restricted to a specific population (i.e. Restricted to MUSC majors or junior standing, etc.)

Course Number Definitions:

- 1000 - 4999 Undergraduate Level
- 5000 - 9999 Graduate Level

A

- Accounting (ACCT) (p. 521)
- Anthropology (ANTH) (p. 527)
- Arabic (ARAB) (p. 531)
- Architecture (ARCH) (p. 531)

B

- Bioengineering (BIOE) (p. 539)
- Biology (BIOL) (p. 541)
- Business (BUSN) (p. 545)
- Business Analytics (BANA) (p. 548)
- Business Law (BLAW) (p. 551)

C

- Candidate for Degree (CAND) (p. 551)
- Chemistry (CHEM) (p. 551)
- Chinese (CHIN) (p. 554)
- Civil Engineering (CVEN) (p. 554)
- Commodities (CMDT) (p. 562)
- Communication (COMM) (p. 563)
- Computer Science (CSCI) (p. 566)
- Construction Engineering and Management (CEMT) (p. 574)
- Counseling (COUN) (p. 575)
- Courses in the Cohort MBA Program (PMBA) (p. 580)
- Courses in the One Year MBA Program (AMBA) (p. 582)
- Criminal Justice (CRJU) (p. 586)
- Culturally and Linguistically Diverse Education (CLDE) (p. 592)

D

- Decision Sciences For Business (DSCI) (p. 595)
- Design & Planning (DSPL) (p. 595)
- Doctoral Studies in Educ Prog (DSEP) (p. 596)

E

- Early Childhood Education (ECED) (p. 597)
- Economics (ECON) (p. 601)

- Education Admin & Supervision (EDUC) (p. 604)
- Educational Foundations (EDFN) (p. 607)
- Electrical Engineering (ELEC) (p. 608)
- Engineering (ENGR) (p. 614)
- English (ENGL) (p. 615)
- Entrepreneurship (ENTP) (p. 620)
- Environmental Sciences (ENVS) (p. 622)
- Ethnic Studies (ETST) (p. 625)
- Executive Business (XBUS) (p. 626)
- Executive Health Administratn (XHAD) (p. 627)

F

- Finance (FNCE) (p. 628)
- Fine Arts (FINE) (p. 631)
- Foundations (FNDS) (p. 634)
- French (FREN) (p. 634)

G

- Geography (GEOG) (p. 635)
- Geology (GEOL) (p. 639)
- German (GRMN) (p. 641)
- Global Energy Management (GEMM) (p. 641)
- Greek (GREK) (p. 643)

H

- Health & Behavioral Sciences (HBSC) (p. 643)
- Health Administration (HLTH) (p. 645)
- Historic Preservation (HIPR) (p. 646)
- History (HIST) (p. 648)
- Human Development and Family Relations (HDFR) (p. 653)
- Humanities (HUMN) (p. 654)

I

- Information Systems (ISMG) (p. 657)
- Initial Teacher Education (ITED) (p. 666)
- Instructional Technology (INTE) (p. 666)
- Interdisciplinary Arts (ARTS) (p. 668)
- Interdisciplinary Major Course (ISMA) (p. 668)
- Interdisciplinary Studies (IDST) (p. 668)
- International Business (INTB) (p. 669)
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L

- Landscape Architecture (LDAR) (p. 674)
- Latin (LATN) (p. 679)
- Learning, Developmental and Family Sciences (LDFS) (p. 679)
- Literacy, Lang, & Culturally Responsive Teaching (LCRT) (p. 680)

M

- Management (MGMT) (p. 683)
- Marketing (MKTG) (p. 687)
- Master of Integrated Sciences (MINS) (p. 690)

- Math Content Knowledge for Ed (MCKE) (p. 691)
- Math Education (MTED) (p. 692)
- Mathematics (MATH) (p. 693)
- Maximizing Access to Research Careers (MARC) (p. 704)
- Mechanical Engineering (MECH) (p. 704)
- Media Forensics (MSMF) (p. 707)
- Modern Languages (MLNG) (p. 708)

P

- Philosophy (PHIL) (p. 709)
- Physics (PHYS) (p. 713)
- Political Science (PSCI) (p. 714)
- Psychology (PSYC) (p. 721)
- Public Administration (PUAD) (p. 725)

R

- Recording Arts (MSRA) (p. 734)
- Religious Studies (RLST) (p. 736)
- Research & Eval Methods (RSEM) (p. 738)
- Risk Management (RISK) (p. 741)

S

- School Library Program (SCHL) (p. 742)
- School Psychology (SPSY) (p. 742)
- Science Education (SCED) (p. 744)
- Science, Technology, Engineering & Math Education (STME) (p. 746)
- Social Justice (SJUS) (p. 746)
- Social Sciences (SSCI) (p. 746)
- Sociology (SOCY) (p. 749)
- Spanish (SPAN) (p. 752)
- Special Education (SPED) (p. 755)
- Sustainability (SUST) (p. 757)

T

- Taxation (MTAX) (p. 757)

U

- Urban & Regional Planning (URPL) (p. 761)
- Urban Design (URBN) (p. 767)
- Urban Teacher Education (UEDU) (p. 768)

W

- Women's Studies (WGST) (p. 770)

Accounting (ACCT)

ACCT 5939 - Internship (1-3 Credits)
Repeatable. Max hours: 9 Credits.
Grading Basis: Pass/Fail Only
Repeatable. Max Credits: 9.

ACCT 6015 - Accounting for the Public Interest (3 Credits)

Applies accounting knowledge and concepts in a not-for-profit organization. Student volunteers help with functions or special projects and are supervised by both faculty members and personnel from the agency to which they are assigned. Note: This class is rarely offered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4915. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6020 - Auditing Theory (3 Credits)

Focus on the professional responsibilities of CPAs, generally accepted auditing standards, and PCAOB auditing standards, with emphasis on the theory underlying the development of standards, objectives and procedures. Students cannot receive credit for both ACCT 4620 & ACCT 6020. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6030 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4620. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6031 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6024 - Advanced Financial Accounting (3 Credits)

Advanced financial accounting concepts and practices with an emphasis on accounting for equity investments, business combinations, and foreign currency. Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 3230 or ACCT 6030 or ACCT 6032 each with a grade of C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6025 - Auditing Practice (3 Credits)

Focus on the application of generally accepted auditing standards and PCAOB auditing standards to practice. Emphasis on procedures used by CPAs to gather and document audit evidence. Prereq: ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Students cannot receive credit for both ACCT 4625 and ACCT 6025. Note: A grade of C or higher must be earned to receive credit for the CPA license. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6031 - Intermediate Financial Accounting I (3 Credits)

This course is designed to provide students with a comprehensive review and understanding of financial accounting principles, procedures, and financial statements as well as the measurement of income and assets. Skills related to problem solving, analytical thinking, and writing will also be developed. NOTE: Students who have taken ACCT 3220 (or equivalent) may not receive credit for ACCT 6031. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6032 - Intermediate Financial Accounting II (3 Credits)

Continuing the intensive coverage of financial accounting from ACCT 3220/ACCT 6031, this course covers concepts of financial accounting theory and generally accepted accounting principles not covered in 3220/6031. This typically includes detailed coverage of liabilities and equity, especially the topics of leases, deferred taxes, pensions and stock-options. Note: A grade of C or higher must be earned to receive credit for the CPA license. NOTE: Students who have taken ACCT 3230 (or equivalent) may not receive credit for ACCT 6032. Prereq: ACCT 6031 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6033 - Advanced Managerial Accounting (3 Credits)

Critical analysis of advanced topics in managerial accounting. Note: This class is rarely offered. Prereq: ACCT 3320. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6054 - Accounting Information Systems (3 Credits)

This course focuses on the analysis, design, implementation and control of accounting information systems. Emphasis is placed on primary business processes including documentation, modeling, retrieving information to support managerial decisions and controlling risks. Topics include transaction cycles, relational database modeling, data analytics and information systems risks and controls. Must earn a grade of C or better to qualify for graduation at the UG level and to receive credit for the CPA license. Prereq: ACCT 6031 or BUSN 6550 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4054 (previously ACCT 3054). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6070 - Intermediate Cost Accounting (3 Credits)

Cost accounting links financial and managerial accounting and emphasizes communication between accountants and managers. Topics include managerial uses of cost data for decision making, analysis of activities and cost behavior, the role of accounting in planning and control, and computer-assisted decision modelling. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: STUDENTS WHO HAVE TAKEN ACCT 3320 (or equivalent) MAY NOT TAKE THIS COURSE. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 3320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6080 - Accounting for Government and Nonprofit Organizations (3 Credits)

Nonprofit Organizations. Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 3220 or BUSN 6550 or ACCT 6031 each with a C or higher, or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 3220 or BUSN 6550 or ACCT 6031 each with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

ACCT 6140 - Fundamentals of Federal Income Tax (3 Credits)

Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including problems of tax planning and compliance. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4410 and 6140. Cross-listed with ACCT 4410. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

ACCT 6150 - Taxation of Business Entities (3 Credits)

A federal tax course stressing tax planning issues affecting corporations (both C corporations and S corporations) and partnerships. Note: A grade of C or higher must be earned to receive credit for the CPA license. Note: Students cannot receive credit for both ACCT 4420 and ACCT 6150. Cross-listed with ACCT 4420. Prereq: ACCT 6140 or ACCT 4410 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6140 or ACCT 4410 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6220 - Seminar: Corporate Financial Strategy and Controls (3 Credits)

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller, including the timely and accurate preparation of the periodic financial statements, maintenance of an adequate records system, a comprehensive set of internal controls and budgets in order to manage and mitigate risk, how to enhance the accuracy of the company's reported financial results and ensure compliance with GAAP or IFRS. Topics also include techniques for cash forecasting, controlling and administering budgets, and developing effective long-range plans. Prereq: ACCT 6030 or ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6032 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6225 - Controllership: Managerial Strategy and Benefits Analysis (3 Credits)

This course is designed to provide a comprehensive understanding of the wide ranging responsibilities of the Controller from a managerial and tax accounting perspective. Topics include establishing a cost accounting system, planning and control of manufacturing costs, business and strategic planning, mergers and acquisitions and a variety of tax related issues such as employment tax, employee vs. contractor, and choice of entity. The course will also include a discussion of benefits analysis, stock based compensation, ISO, NQSO and 83b elections. Prereq: ACCT 6220 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6220 with a grade of C (2.0) or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6230 - Advanced Topics in Mergers and Acquisitions (3 Credits)

Mergers and acquisitions are often a key component of organizational strategy for growth and competitive advantage; yet empirical studies indicate many of these transactions fail to meet their intended objectives. This course prepares accounting students as financial leaders to positively influence the achievement of planned synergies and acculturation for more successful M&A transactions. Integrating perspectives from accounting and organizational development, course topics include transaction valuation, contingent consideration, and asset impairment testing to organizational systems theory and post-transaction integration. Prereq: Grade of C (2.0) or higher in ACCT 6020 or ACCT 4620 and ACCT 6070. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6020 or ACCT 4620 and ACCT 6070 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6250 - Seminar: Financial Accounting (3 Credits)

Nature and origin of accounting theory and the development of postulates, principles and practices. Methodology appropriate to development and evaluation of accounting theory, with special emphasis on accepted research standards and procedures. Note: A grade of C or higher must be earned to receive credit for the CPA license. Co-req: ACCT 6032 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: ACCT 6032 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6260 - Seminar: Managerial Accounting (3 Credits)

Focuses on the conceptual foundations of managerial accounting. Behavioral and quantitative approaches regarding information for decision making, planning, control, performance evaluation and other issues are investigated. Note: A grade of C or higher must be earned to receive credit for the CPA license. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

ACCT 6280 - Accounting Ethics (3 Credits)

This course examines the ethical responsibilities of accounting professionals from a personal and professional perspective, including examples of ethical dilemmas accounting professionals confront. The course utilizes various authoritative codes of conduct, professional standards and applied ethical theory as ethical guidance for auditors, accountants, tax professionals, and accounting management. A variety of case studies are employed to give students practice in developing a decision making approach in dealing with difficult ethical scenarios. Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6282 - Capitalism, Accounting and Ethical Choices (3 Credits)

Examines the development of the U.S. economy from 1850 to today with emphasis on the ethics of accounting, capitalism, and government controls. Prereq: ACCT 2220 or BUSN 6550 (not strictly enforced). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6285 - Accounting and Finance for Sustainability (3 Credits)

Topics in accounting and finance related to business sustainability include the merits and challenges of a triple-bottom-line perspective, mandatory and voluntary reporting, environmental liability measurement and disclosure, emissions trading, green investments, shareholder activism, microfinance, and socially responsible investing. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6290 - Management Control Systems (3 Credits)

Focuses on the design and use of control systems which ensure that people in organizations behave consistently with the organizational goals. Controls for communication, motivation and performance evaluation (along with informational requirements) are stressed through analysis of cases and classroom discussion. Note: This class is rarely offered. Prereq: BUSN 6550 or equivalent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6320 - White Collar and Financial Crimes (3 Credits)

Course provides an opportunity to examine criminal activity perpetrated by individuals and/or organizations in a position of trust. White collar and financial crimes are qualitatively different from street crimes or violent crimes, yet they are highly destructive. Cover: types of crime, social impact, prevention, detection, regulating etc. Prereq: BUSN 6550 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6330 - Fraud Auditing (3 Credits)

This course provides an introduction to and guidance for creation of an effective fraud audit program in core business systems. The fraud audit is designed specifically to detect potential fraud and is vastly different than the traditional audit. Fraud auditing focuses on proven fraud methodology that allows auditors to discover fraud versus investigating it. The course: • Explains how to create a fraud audit program • Shows auditors how to locate fraud through the use of data mining • Focuses on proven methodology for detecting fraudulent transactions • Explores fraud discovery within specific corporate F&A functions, such as disbursement, procurement, payroll, revenue misstatement, inventory, journal entries, and management override. Prereq: ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6340 - Financial Statement Analysis (3 Credits)

Financial statements are used as an information source on which to base investment, lending potential or even employment. Designed to develop skills in using, understanding, analyzing, and interpreting financial statements and to make students aware of the value and limitations of financial statement information. Note: Should take in the third semester of the graduate program. Prereq: BUSN 6550 or ACCT 6031 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall.

ACCT 6350 - Current Issues in Professional Accounting (3 Credits)

An in-depth analysis of current issues in the accounting profession, including ethics development, and validity of standards and regulations.

Prereq: ACCT 3230, ACCT 4620, ACCT 6020 or permission of instructor.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall.

ACCT 6360 - Fraud Examination (3 Credits)

This course examines the theories and methods of the full spectrum of fraud examination including prevention, detection, investigation, and adjudication. In this course, students will explore the significant differences between fraud examination and auditing, going beyond detection into the investigative and adjudication process. Prereq:

ACCT 6020 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6020 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6370 - International Accounting (3 Credits)

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context, international auditing practices and procedures, international tax implications and the implications of operating within the regulations of the Foreign Corrupt Practices Act, the European Union, North American Free Trade Agreement and General Agreement on Tariffs and Trade. Prereq: BUSN 6550 or equivalent. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. IFRS's are reviewed and compared with the requirements of US GAAP. Cross-listed with INTB 6370 and ACCT 4370. Prereq: ACCT 6031 or BUSN 6550.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

ACCT 6380 - Forensic Accounting (3 Credits)

An examination of investigative auditing, fraud auditing, litigation support, and economic quantification of damages. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6400 - Taxation of C Corporations and Shareholders (3 Credits)

This course is a study of federal income tax problems facing corporations and corporate shareholders. The course addresses introductory corporate tax issues found in Subchapter C of the Internal Revenue Code, including defining a "corporation" for federal income tax purposes; tax consequences associated with the formation of a corporation; taxation of corporate operations (including an analysis of the differences that exist between earnings and profits, dividend distributions and taxable income); corporate redemption transactions; partial liquidations; complete liquidations; and the acquisition, sale and disposition of corporate entities in transactions governed by Sections 336(e) and 338 of the Internal Revenue Code. Prereq: ACCT 6150 with a grade of C or higher.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

ACCT 6410 - Advanced Tax for Individuals (3 Credits)

This course is an advanced federal income tax course stressing the use of the Internal Revenue Code, Treasury regulations, case law, and administrative guidance to resolve federal income tax issues affecting individuals. Topics include items of gross income inclusion, exclusions, deductions, items of non-recognition, characterization of income, and tax rates. Prereq: Grade of C or higher in ACCT 6140 or ACCT 4410.

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C or higher in ACCT 6140 or ACCT 4410. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

Typically Offered: Spring.

ACCT 6442 - Accounting: Professional Research and Communications (3 Credits)

This course provides students with a structured approach to researching and communicating practice-oriented financial accounting, auditing, and tax-related issues. After completing this course, students should be able to effectively: (1) Communicate (both oral and written) solutions to practice-oriented financial accounting, auditing, and tax-related issues. (2) Navigate through U.S. and international accounting, auditing, and tax authorities. (3) Conduct systematic research for all types of accounting-related problems then reach and communicate efficient conclusions using a variety of techniques. Prereq: ACCT 6030 or ACCT 6032 or ACCT 3230 each with a grade of C or higher, or department consent.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with ACCT 4442. Max hours:

Grading Basis: Letter Grade

Prereq: ACCT 6030 or ACCT 6032 or ACCT 3230 each with a grade of C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6450 - Tax Research (3 Credits)

This course provides a study of various methodologies used in tax research and tax planning and requires students to present their results through various forms of business communication. In particular, this course explores techniques (with an emphasis on electronic/on-line techniques) for locating and researching judicial cases, statutory materials and legislative histories, and administrative materials promulgated by the Internal Revenue Service applicable to tax-related issues and problems. Students must present their tax research results for various client-based hypothetical factual patterns in written formats, including memoranda and client letters, and through individual oral and group presentations. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

ACCT 6470 - Internal Auditing (3 Credits)

Intro course for business students and CIA candidates. Topics include: IA fundamentals; IA standards; internal controls; managing the IA department; IA working papers, procedures and evidences; fraud detection and prevention; ethics; evaluation of the IA function, and Sarbanes-Oxley Act of 2002. Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 4620 or ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

ACCT 6480 - Partnership Taxation (3 Credits)

This course focuses on fundamental tax issues relating to partnerships and partners arising from the formation, operation, and liquidation of partnerships. Course work includes an examination of pertinent federal income tax returns of a partnership. Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6150 with a grade of C or higher. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

ACCT 6490 - Experiential Learning (3 Credits)

Designed to provide practical knowledge on developing a professional practice in accounting or financial management. Topics: Marketing, operating a professional practice. Lectures, guest speakers (if you are interested in being a guest lecturer for the class contact the instructor), and student projects. Prereq: ACCT 3220 or permission of instructor. Cross-listed with ACCT 4490. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6510 - Advanced Accounting Information Systems (3 Credits)

The course is designed to develop knowledge and skills used to understand and evaluate corporating accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Prereq: ACCT 6054 or department consent. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade Prereq: ACCT 6054 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Typically Offered: Fall.

ACCT 6520 - Issues in Oil and Gas Accounting (3 Credits)

The Oil and Gas Accounting course is a course designed to give students an overview of the oil and gas industry and the particular accounting issues this industry faces. The focus is on the oil and gas industry but many of the issues discussed are appropriate and applicable to all energy-related entities. This is a valuable learning experience for those interested in acquiring an understanding of the accounting issues for energy management firms in preparation for entry into public accounting. The course enjoys support from the energy industry in the form of guest speakers and project ideas. Prereq: BUSN 6550 or ACCT 3220 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with ACCT 4520. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 or ACCT 3220 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Spring.

ACCT 6620 - Seminar: Auditing and Other Assurance Services (3 Credits)

A graduate seminar course providing in-depth exposure to specialized topics in auditing and other assurance services, with an emphasis on recent developments in the profession. Includes coverage of generally accepted auditing standards and PCAOB standards. Note: A grade of C or higher must be earned to receive credit for the CPA license. Prereq: ACCT 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6030 or 6031 and 6020 all with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring.

ACCT 6800 - Special Topics (3 Credits)

Research methods and results, special topics and professional developments in accounting. Consult the current 'Schedule Planner' for semester offerings as new special topics courses are frequently added. Prereq: Varies according to topics and instructor requirements. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6840 - Independent Study (1-8 Credits)

Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6900 - Professional Certification in Accounting (3 Credits)

This course will prepare students for the Uniform Certified Public Accountant Examination, including the Auditing and Attestation (AUD), Business Environment and Concepts (BEC), Financial Accounting and Reporting (FAR), and Regulation (REG) sections. Topical coverage will include a balance of most-tested topics, difficult topics, and exposure to topics not addressed in required accounting degree courses. Note: there will be a materials fee of \$1,100 for this course. All materials will continue to be available until successful passage of the CPA Exam. Note: Undergraduate Accounting students typically perform better in this class when taking it during the final semester prior to graduation. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

ACCT 6939 - Internship/Cooperative Education (3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 15 semester hours for MS students and 21 hours for MBA students and a cumulative 3.2 GPA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

ACCT 6950 - Master's Thesis (1-8 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Additional Information: Report as Full Time.

Anthropology (ANTH)

ANTH 5000 - Special Topics in Anthropology (1-6 Credits)

Designed to give students a chance to evaluate critically some practical or theoretical problem under faculty supervision and to present results of their thinking to fellow students and instructors for critical evaluation. Prereq: Permission of instructor. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4000. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Anthropology graduate students

ANTH 5014 - Medical Anthropology: Global Health (3 Credits)

This course is concerned with the underlying biological and cultural determinants of health throughout the human life cycle in global and cross-cultural perspective. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is ANTH 5024. Prereq: Graduate standing. Cross-listed with ANTH 4010. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5030 - Ethnobiology (3 Credits)

Considers the relationship between human society and plants and animals in the natural world. Primary focus on the perception and cognitive organization of the environment and how that affects the definition and use of plants and animals as resources. Note: this course assumes that students have completed introductory coursework in anthropology and/or biology. Prereq: Graduate standing. Cross-listed with ANTH 4030. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5053 - Quantitative Methods in Anthropology (3 Credits)

Surveys the ways of deriving meaning from anthropological data by numerical means, including, but not confined to basic statistical procedure. Note: this course assumes that students have completed a college-level algebra course. Prereq: Graduate standing. Cross-listed with ANTH 4050. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5060 - Evolutionary Medicine (3 Credits)

Evolutionary medicine is a relatively new approach for understanding patterns of human health and disease. In this course, students will learn how human evolutionary history has shaped our susceptibility and resistance to both chronic and infectious diseases. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4060 and PBHL 4060. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5070 - Culture of Development and Globalization (3 Credits)

Anthropological critiques of development and globalization point out that they have occurred without regard for the diversity of human culture and human need. Beginning with this analysis, this course goes one step further by examining culture and values of development and how they affect the way development gets done. Note: students should consult with the instructor prior to enrolling in this course. Prereq: Graduate standing. Cross-listed with ANTH 4070. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5080 - Global Health Practice (3 Credits)

A travel-study course that provides students the opportunity to work on global health issues in the context of a supervised internship experience. In addition to a formal internship placement or directed research opportunity, students attend formal lectures and participate in seminars devoted to addressing those health issues most relevant to the country in which the course is being taught. Note: this course assumes that students have completed HBSC/ANTH 4010/5014, HBSC/ANTH 4020/5024, HLTH 6070 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4080 and PBHL 4080. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5121 - Zooarchaeology (3 Credits)

Introduction to the theory and methods of zooarchaeology through lectures, readings, and hands-on lab work identifying and analyzing mammalian skeletal material. Students will learn what mammalian remains indicate about biological and cultural evolution of humans. Cross-listed with ANTH 4121. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5200 - Gender in Cross-Cultural Perspective (3 Credits)

A comparative analysis of gender-based status and social roles of women and men, with women's status and roles emphasized due to their near-universal construction as the "other" sex. Examines, in cross- and sub-cultural context, the relations among women's status and their subsistence and reproductive activities; and the division of labor by sex, ideology and political economy. Prereq: Graduate standing. Cross-listed with ANTH 4200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5230 - Anthropology and Community Based Participatory Research (3 Credits)

The seminar explores anthropological critiques, knowledge production and multi-media approaches to community based participatory research (CBPR) such as photovoice and digital storytelling to understand the history of CBPR and analyze partnerships between university researchers and community representatives. Prereq: Graduate standing. Cross-listed with ANTH 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5260 - Human Reproductive Ecology (3 Credits)

Considers the determinants of fertility variation within and among traditional human societies. Biocultural and ecological perspectives on pubertal timing, marriage patterns, birth seasonality, duration of birth intervals and reproductive senescence. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4260. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5270 - Anthropology of the Body (3 Credits)

Explores how society, through culture, creates collective and individual bodies; embodied experience across the life course; and the body as an expression of social power, bodily modification and adornment.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ANTH 4270. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5290 - Anthropology and Public Health (3 Credits)

This course critically explores anthropological approaches to public health problems. Through a number of key issues and case studies, we examine how public health practice can be enhanced through anthropological research, theory and methodology. Prereq: Graduate standing. Cross-listed with ANTH 4290. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5300 - Migrant Health (3 Credits)

This course examines health issues associated with transnational migration from an anthropological point of view. Drawing upon case studies, we examine the health of migrant communities in both host and sending nations. Prereq: Graduate standing. Cross-listed with ANTH 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5320 - Archaeology of Mexico and Central America (3 Credits)

Surveys the major prehistoric and protohistoric cultures and societies of that area of Mexico and Central America identified with the evolution of Meso-American civilization. Major topics include early human colonization of the Americas, the domestication of plants and animals, the emergence of regionally-based cultures and societies, trade and exchange and the evolution of urbanism and the state. Primary emphasis on such ancient cultures and societies as those of the Olmec, Zapotec, Maya, Teotihuacan, Toltec and Aztec. Note: this course assumes that students have completed an introductory archaeology course. Prereq: Graduate standing. Cross-listed with ANTH 4320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5330 - Lithic Analysis (3 Credits)

Examines the theoretical basis and methodological tools used by archaeologists in the analysis of prehistoric stone tools. Topics of discussion include the mechanics of stone fracture, typologies, use wear analysis and core reduction techniques. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4330. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5350 - Anthropology of Globalization (3 Credits)

This course provides an overview of anthropological contributions to the study of globalization. Particular attention is devoted to: transformations in global capitalism, state and immigration policy, transnational families, health and transnationalism. Note: previous coursework in anthropology is strongly recommended for success in this course. Prereq: Graduate standing. Cross-listing ANTH 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5380 - Archaeology of Hunters-Gatherers (3 Credits)

Explores the theory and methods used by archaeologists to investigate prehistoric hunter gatherers. Topics of concern include mobility, subsistence, procurement, and socio-political organization. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5400 - Archaeology of Power and Inequality (3 Credits)

Addresses inequality and power through a long-term archaeological and theoretical perspective. Discusses explanations for the origins of power and inequality and their role in early small-scale societies and emerging complex politics. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4400. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5440 - Museums in the 21st Century (3 Credits)

This is an advanced course on natural history/anthropology museums. It will examine practical issues facing museums, and consider the complex questions that museums raise. The class includes lectures, discussions, and hands-on collection work, and exhibit/ outreach development.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ANTH 4440. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5500 - Advanced Issues in Human Evolution (3 Credits)

This flexible course offers an advanced treatment of issues in human biological evolution. Topics may emphasize morphological evolution, behavioral evolution, the environment of human evolution, non-human primate comparative information. Prereq: Graduate standing. Cross-listed with ANTH 4500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5530 - Anthropological Genetics (3 Credits)

An advanced survey of molecular and population genetics and their applications in anthropology. Topics vary, including but not limited to: genetic epidemiology, genetic distance studies, behavioral genetics, developmental genetics, sociobiology, and use of mitochondrial DNA to reconstruct population histories. Emphasis is on applications of new technology and methodology, as well as new genetic paradigms replacing classical models of genetic causation. Note: this course assumes that students have completed undergraduate coursework in biological anthropology or genetics. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5550 - Primate Comparative Anatomy (3 Credits)

Examines human and non-human primate anatomical diversity. Students learn primate anatomy and the morphological differences among species. Explanations for the evolutionary origins of differences are reviewed, focusing on evolutionary theory, comparative methods and biomechanics. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4550. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5560 - Human Ecology (3 Credits)

Studies demographic and ecological variables as they relate to human populations. Aspects of natural selection, overpopulation and environmental deterioration are considered. Note: this course assumes that students have a background in biological or physical anthropology. Prereq: Graduate standing. Cross-listed with ANTH 4560. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5570 - Landscape Archaeology (3 Credits)

Introduces spatial archaeology through intrasite analysis and regional studies. Methods treated include site location and quantitative spatial organization. Theoretical topics include definitions of community, ancient urbanism and the impact of subsistence and politics on relations to the landscape. Note: this course assumes that students have completed ANTH 1302 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4570. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5580 - Neanderthals and the Origin of Modern Humans (3 Credits)

Focuses on the human fossil record for the taxon *Homo sapiens*, including the earliest members of this group ("early" or "Archaic" *Homo sapiens*), the Neanderthals and so-called "Anatomically modern" *Homo sapiens*. The goal of the course is to survey the major issues within the area of modern human origins, and to learn about the evolutionary relationships, lifeways and behaviors of these groups. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4580. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5590 - Primate Behavior (3 Credits)

Studies nonhuman primate behavior with emphasis on understanding social behavior, ecology and issues related to human evolution. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4590. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5600 - Medical Anthropology (3 Credits)

Introduces students to the theories and concepts of medical anthropology, the study of human health and illness. Explores conceptions of the body, modalities of healing, the clinical encounter, and new medical technologies. Prereq: Graduate standing. Cross-listed with ANTH 4600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5640 - Darwinian Approach to Human Behavior (3 Credits)

The evolution of human behaviors from a Darwinian perspective, focusing on the natural selection of behaviors that maximize reproductive success. Includes topics such as male and female reproductive strategies, female mate choice, male violence and resource acquisition and control. Note: this course assumes that students have completed ANTH 1303 or equivalent. Prereq: Graduate standing. Cross-listed with ANTH 4640. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5800 - Special Topics in Medical Anthropology (3-9 Credits)

Seminar series on current issues in medical anthropology. Faculty offer a range of different courses, including the political economy of drugs, health and human rights, and reproductive health. Prereq: graduate standing. Repeatable. Cross-listed with ANTH 4800. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5810 - Integrating Anthropology (3 Credits)

Designed to build on specialized course work in the subdisciplines of anthropology, this course emphasizes the basic concepts that integrate and unite the discipline and give it unique perspective. These are the concepts of culture, adaptation and human evolution. In the last several weeks of the course, students consider the applicability of the anthropological perspective to specific human issues. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students. Restriction: Restricted to Anthropology graduate students. Cross-listed with ANTH 4810. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Anthropology graduate students

ANTH 5840 - Independent Study (1-6 Credits)

Directed study based on a specific subfield of anthropology. Prereq: Permission of instructor required. Repeatable. Max Hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

ANTH 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ANTH 5910 - Field Experience in Archaeology (3-6 Credits)

Students participate in archaeological field research and data recovery and conduct laboratory analysis of materials recovered in the field. Emphasis is placed on excavation technique and accuracy of record keeping. Note: this course assumes that students have a background in archaeology. Prereq: Graduate standing. Cross-listed with ANTH 4910. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

ANTH 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Max hours: 9 Credits.
Grading Basis: Letter Grade

ANTH 6000 - Seminar in Current Research Topics (1-3 Credits)

An inquiry into current research of critical and general interest to anthropologists. Variable format. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6040 - Advanced Topics in Medical Anthropology (1-4 Credits)

A flexible seminar format for dealing with topics of special interest in medical anthropology on an advanced graduate level. Topics to be considered vary from semester to semester. Examples include high altitude adaptation, anthropological perspectives on substance abuse, epidemiology, environmental and occupational health, the health consequences of cultural change and cross-cultural psychiatry. Note: Topics vary from semester to semester. Note: students should receive permission from the instructor prior to registering for this course. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6041 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice and property rights. Prereq: Graduate standing. Cross-listed with HBSC 6320 and 7320. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6063 - Qualitative Research Design and Methods (3 Credits)

Much of the data collected in the social sciences is interview and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Anthropology graduate students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Anthropology graduate students

ANTH 6103 - Current Theory in Ethnography (3 Credits)

An in-depth inquiry into important theories in cultural anthropology through extensive primary source reading. Practice in formulating theory, critical thinking and theoretical writing are emphasized. Note: First course in a two-course required graduate sequence. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6133 - Anthropological Perspectives on Language (3 Credits)

An intensive introduction to linguistic anthropology. Following a brief survey of technical linguistics, focus is on: the roles of language in society; multilingualism; language and identity; language and worldview; language, gender, class and power; language as social action; and other topics. Students carry out investigations based on models from their reading, as well as responding to the theoretical approaches of the field. Note: this course assumes that students have completed undergraduate coursework in cultural anthropology. Prereq: Graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6307 - Contemporary Perspectives in Archaeology (3 Credits)

Explores contemporary theoretical methodological perspectives in archaeology. Structured to proceed from a survey of the history of archaeological thought based on recent retrospectives, to an analysis of works reflecting current perspectives and directions. Topics include: archaeological interpretation, classical versus scientific archaeology, versus culture-history, functionalist and materialist paradigms, ethnoarchaeological and text-based studies, neo-evolutionism, interactionist models, Marxist perspectives, processual theory. Note: this course assumes that students have completed undergraduate coursework in archaeology. Prereq: Graduate standing. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6317 - Archaeological Research Design and Analysis (3 Credits)
Examines the methods and techniques used in archaeology, including theory-building, hypothesis testing and middle range theory. Core materials emphasize the learning and critique of basic archaeological assumptions and the methods and theories used to scrutinize the collection and interpretation of data. Topics include chronometric applications and paleo-environmental reconstruction. Note: this course assumes that students have completed ANTH 6307 or equivalent. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6503 - Biological Anthropology Core: The Fossil Record (3 Credits)

Examines the historical development and modern practice of biological anthropology, including the theoretical and methodological foundations of this field. Emphasis is placed on the evidence for human and non-human primate evolution and the processes that influenced this evolution. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6513 - Biological Anthropology Core: Modern Human Variation (3 Credits)

Considers the theory and methods used in investigations of biological variation in contemporary human populations. This includes the biological and cultural sources responsible for creating and maintaining contemporary variation as well as their functional consequences. Methods of research design and how to write a grant and scientific articles are considered. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6520 - Seminar: Selected Topics in Physical Anthropology (3 Credits)

A flexible seminar format for dealing with topics of special interest in physical anthropology on an advanced graduate level. Topics vary from semester to semester. Examples include: anthropology of nutrition, paleoecology, primate evolution, field experience in paleontology, advanced osteology and advanced human ecology. Note: This course assumes that students have completed undergraduate work in biological/physical anthropology. Prereq: Restricted to Graduate and Graduate Non-Degree students. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ANTH 6840 - Independent Study: ANTH (1-3 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

ANTH 6950 - Master's Thesis (1-6 Credits)

Term offered: fall, spring, summer. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Arabic (ARAB)

ARAB 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Architecture (ARCH)

ARCH 5000 - Math and Physics for Architects (3 Credits)

Provides the review of mathematics and physics. This is a prerequisite for the graduate technology courses. Does not count toward the required credits for the MARCH degree. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Typically Offered: Summer.

ARCH 5110 - Design Studio I (6 Credits)

The first of two elemental design studios focused on the language of design, organizational and spatial systems and principles as well as on analog and digital methods of visualizing architectural ideas and forms. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5120 - Design Studio II (6 Credits)

The second of two elemental design studios focused on translating organizational and spatial systems, principles and concepts into architectural systems. Through a number of small scaled design exercises students learn how organizational and spatial systems can be leveraged in the design of their buildings. Prereq: ARCH 5110 and ARCH 5510. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5130 - Design Studio III (6 Credits)

The first of the two analytical design studios addresses how design ideas are formed through the analysis of the program in terms of action and perception and how to transform those ideas into formal strategies and specific architectural experiences. Prereq: ARCH 5120. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5140 - Design Studio IV (6 Credits)

The second of the two analytical studios will build upon ideas developed in the previous studio concerning how the analysis of the program in terms of action and perception inform the formal strategies and the design of specific architectural experiences. Prereq: ARCH 5130. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5210 - Introduction to Architecture (3 Credits)

Introduces important ways of looking at architecture and acquaints students with the various perspectives that they will later find in the rest of the curriculum. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5220 - History and Theory Architecture I (3 Credits)

Introduces world architecture and urbanism from prehistory to the Italian Renaissance. The course helps students understand the various cultural, technological, philosophical, and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5230 - History and Theory Architecture II (3 Credits)

Examines world architecture and urbanism from the Italian Renaissance to the present. Helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape buildings through history. Buildings and settlements on all continents and in all of the major world cultures are discussed. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5310 - Building Construction I (3 Credits)

The first of a two-course sequence that provides an overview of the structure, systems, assemblies and processes that make a building. Provides a broad view of building technology and an understanding of the interrelationship of all the parts. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5320 - Building Construction II (3 Credits)

This course focuses on principles and processes of building construction, and introduces major constructional systems. It stresses the relationship between architectural concepts and building technology and assemblies. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5330 - Sustainable Systems I (3 Credits)

The first course in the sustainable systems sequence introduces concepts and design methods of energy-efficient environmental control in buildings including thermal and moisture loads, heating, ventilation and air conditioning equipment and systems, and active and passive thermal strategies. Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 5340 - Sustainable Systems II (3 Credits)

The second course in the sustainable systems sequence introduces concepts and design methods of plumbing, power distribution, renewable electricity, artificial illumination, daylighting, acoustics, vertical transportation, fire protection, and telecommunication systems in buildings with a focus on energy and resource efficiency. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 5350 - Structures I (3 Credits)

The first course in the structures sequence introduces the analysis and design of structural elements and focuses on the principles of static's and the strength of materials. Topics include stress determination, deflection and the behaviors of tension, compression and shear in various structural elements. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5360 - Structures II (3 Credits)

Focuses on the relationship between architectural concepts and the selection of structural systems. Addresses the qualitative and quantitative analysis of reinforced concrete, steel and wood structural systems and members. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5410 - Professional Practice (3 Credits)

Introduces the essential elements of professional practice through topics such as internship, licensing, services, modes of practice, fees, marketing, documents, specification and production procedures. Examines traditional and emerging forms of practice. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5420 - BIM: Principles & Practices (3 Credits)

Introduces basic aspects of building information modeling (BIM) concepts, software, development, management and delivery for architectural projects. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5430 - Social Context of Design (3 Credits)

Focuses on the ethical, social, cultural and psychological principles, which people bring to the perception and design of the built environment. Its major topics include: ethical values; cultural patterns and values; social, cultural and personal ritual; and pre-design and programming. Prereq: Graduate ARCH students only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5450 - Sustainable Design Practices (3 Credits)

This course explores sustainable principles and practices as it relates to the design, construction of both the building and its site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 5510 - Architectural Graphics (3 Credits)

This course explores the development of graphic skills emphasizing drawing as a means to design. It includes investigation of drawing types and methods; diagramming of ideas and systems; informative, exploratory and developmental sketching. Restriction: Restricted to Graduate Architecture students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6150 - Design Studio V (6 Credits)

The first of two reflective studios will assume reflective/critical stance towards programmatic issues or rather cultural presuppositions and critically explore the ways in which architecture can play a critical as well as an affirmative role within the broader cultural context. Prereq: ARCH 5140. Coreq: ARCH 6151. Max hours: 6 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6170 - Design Studio VI (6 Credits)

This is the second of two reflective studios, which focuses on the comprehensive design of an architectural project including considerations of structural systems, environmental systems, life safety concerns, regulatory considerations, wall sections, building assemblies and significant detail. Prereq: ARCH 6150. Coreq: ARCH 6171. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

Coreq: ARCH 6171 Restriction: Restricted to ARCH graduate students within the College of Architecture and Planning

ARCH 6171 - Integration Seminar (3 Credits)

In this seminar students will develop and document the technical aspects of their Design Studio VI design projects including, life safety, mechanical, electrical, plumbing, conveyance, accessibility systems and material assemblies. Prereq: ARCH 6150, ARCH 6151. Coreq: ARCH 6170. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

Coreq: ARCH 6170 Restriction: Restricted to ARCH graduate students within the College of Architecture and Planning

ARCH 6180 - Furniture Design (3 Credits)

Students learn how to design and build furniture in the College's woodshop. Topics include ergonomics, properties of materials, principles and techniques of joinery and techniques of hand and machine tools. Cross-listed with ARCH 3709. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6185 - Digital Design & Fabrication (3 Credits)

An introductory class to Computer Aided Design (CAD) and Computer aided manufacturing (CAM). Students explore how these technologies apply to the field of architecture with a focus is on parametric/algorithmic design approaches and mass customization manufacturing techniques.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6190 - Special Topics in Design Studies (3 Credits)

Various topics in design, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6195 - Aspen Summer Workshop (3 Credits)

Three weeks with three world class architecture firms in Roaring Fork Valley. The firms lead students through a unique design project that develops and challenges their observational, conceptual, and visualization abilities. Drawing as a means of seeing, understanding and creating dominates the process/ethic of the course. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6205 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and URPL 6405. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6210 - A History of American Architecture (3 Credits)

This course traces the history of architecture in North America from the early colonial settlements in the late 17th century to the corporate architecture of the late 20th century. The various formal languages and theories that have shaped the history of American architecture will each be discussed through the close examination of a select group of buildings within their specific cultural, social, political, and economic contexts. Prereq: ARCH 5220 and ARCH 5230. Cross-listed with ARCH 4610. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5220 and ARCH 5230.

ARCH 6212 - A History of Modern Architecture (3 Credits)

This course traces the various theoretical and formal developments in European and American Architecture from the end of the 19th century through the 20th century. The works of a select group of architects will be examined and discussed in relation to the diverse body of goals and objectives, ideas and ideals that constituted the Modern movements in architecture. Prereq: 5230. Cross-listed with ARCH 4612. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5230.

ARCH 6220 - A History of Theoretical Discourse on Architecture (3 Credits)

This course traces the history of theoretical discourse on architecture from the Renaissance to the present. It explores the genealogy of current theoretical stances and critical methodologies in the discipline of Architecture through the close reading of a select group of historic and contemporary texts. Prereq: ARCH 5230. Cross-listed with ARCH 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 5230.

ARCH 6222 - Contested Terrains (3 Credits)

Explores the different processes, factors and forces that determine and influence occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6230 - Preservation Theory and Practice (3 Credits)

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with HIPR 6010. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6231 - Regionalisms & the Vernacular (3 Credits)

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Cross-listed with HIPR 6110. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6232 - Reading the City (3 Credits)

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Prereq: HIPR 6410 is recommended. Cross-listed with HIPR 6610. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6233 - Historic Buildings in Context (3 Credits)

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept. Procedures and skills are introduced. Prereq: HIPR 6010 or permission of instructor. Cross-listed with HIPR 6210. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6240 - History Of The City (3 Credits)

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with URBN 6640. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6241 - Studies in Tectonics (3 Credits)

This research seminar focuses on tectonics - the logic of structure & material combinations (wood, metal, stone, masonry etc.). Through case studies, the relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary architectural concerns. Prereq: HIST I & II. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6254 - Architecture, In Theory (3 Credits)

Explores theories and texts that have influenced the analysis and the production of architectural form. The focus is on the expressive potential of architectural forms and the modalities of the realization of this potential. Cross-listed with DSPL 7016. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6255 - Cultural Institutions (3 Credits)

Selected types of cultural institutions including art museums, libraries, cultural centers, theaters, etc. are studied in this research seminar. Through case studies and readings, their ongoing cultural, architectural and corporate values are examined. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6256 - Community Development (3 Credits)

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with URPL 6400. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6257 - Community Engaged Design Practice (3 Credits)

Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with LDAR 6635 and LDAR 4435. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6258 - Social Justice in Planning (3 Credits)

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and LDAR 6637. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6259 - The Art of Traditional Design (3 Credits)

Introduction to Philosophy, History and Design Methods of Traditional Design derived from Greek precedents developed through the Renaissance and later the Beaux Arts. The course will emphasize this influence on the Architecture of the United States. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6260 - Architectural Precedents (3 Credits)

Explores a number of traditional answers to recurring design issues, such as how to approach and enter a building or how to design a facade. In a seminar setting, students examine traditional ideas for their underlying principles and design new architectural compositions based on those principles. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6261 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Cross-listed with URBN 6625 and URPL 6395. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6270 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with URPL 6350, URBN 6525, and LDAR 5530. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

ARCH 6275 - History Native Amer Arch (3 Credits)

Introduces Native American architecture from the 12th century to the present. The course helps students understand the various cultural, technological, philosophical and aesthetic ideas that helped shape these buildings throughout history. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6290 - Special Topics in Cultural Studies (3 Credits)

Various topics in cultural studies, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 21 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 21.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Cultural Studies Area.

ARCH 6310 - Greenbuilding Tech (3 Credits)

This seminar will advance the student's knowledge of environmental building and construction methods through studies in material resources, innovative green systems, alternate green technology, energy efficiency, and affordability in "green architectural design." Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6313 - LEED Certification, Greenbuilding Seminar (3 Credits)

This RIGOROUS course will use the LEED Certification process to provide a framework for assessing building performance and meeting sustainability goals, following the 1st step in a two stage Professional Accreditation process, focusing on LEED GA, Green Associate Accreditation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6314 - LEED AP Advanced Greenbuilding Seminar (3 Credits)

This advanced LEED Certification and Accreditation course builds on the first LEED GA course, providing a framework for assessing green building performance and sustainability goals, exploring advanced green building concepts and preparing the student for the LEED AP BD+C exam. Prereq: ARCH 6313 or instructor approval. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ARCH 6313 Restriction: Restricted to majors within the College of Architecture and Planning

ARCH 6351 - Building Conservation (3 Credits)

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6352 - Documentation, Analysis, Representation (3 Credits)

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & Photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Cross-listed with HIPR 6310. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6353 - Daylighting Design (3 Credits)

Daylighting is the use of light from the sky to illuminate building interiors. The objective of this course is to introduce students to the fundamentals of daylighting design including how it is perceived and how it impacts building energy flows. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6355 - Urban Conservation: Context for Reuse (3 Credits)

Human habitats (especially cities) are dynamic. The preservationist cannot freeze cities in a static representation of the past. The course deals with philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. Cross-listed with HIPR 6410. Max hours: 3 Credits.

Grading Basis: Letter Grade

ARCH 6356 - Adaptive Reuse: Business and Practice (3 Credits)

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists. Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with HIPR 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

ARCH 6357 - The Poetic Detail-Studies in Tectonics—Wood (3 Credits)

This research seminar focuses on tectonics through traditional timber frame and wood construction case studies. The relationship between function, aesthetics, detail, and tectonics are explored in relation to contemporary concerns. Learning by making. Cross-listed with ARCH 3704. Restriction: Restricted to ARCH-BS majors with sophomore standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6370 - Introduction To Design Build (3 Credits)

Introduction to Design Build project delivery methods important to architects. Lecture, research on the industry and an individual student project are the methods used to introduce ethical questions, role of the architect, owner, consultant and subcontractors. Work leads to studio project or case study. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6373 - Construction in Design Build (3 Credits)

Using a single project, students fully explore the design phase, estimating, scheduling and project management skills in traditional construction. Course is concurrent with an advanced studio and builds a project on a site. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6375 - Green Tech Eco-Furniture Fabrication I (3 Credits)

Green Tech I is the first of two courses that are a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Coreq: ARCH 6376. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3804. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6376 Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6376 - Green Tech Eco-Furniture Fabrication II (3 Credits)

Green Tech II is the second of two courses that is a "real build" course in which students advance their knowledge of environmental design through full-scale construction of architectural elements, furnishings, accessories, finishes, outdoor gear, or even clothing. Students must be enrolled in both Green Tech I and Green Tech II in the same semester. Coreq: ARCH 6375. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Cross-listed with ARCH 3806. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6375 Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6377 - EcoFAB: Furniture Design and Fabrication for Small-Scale Residential Architecture (3 Credits)

This unique, quick-paced seminar focuses on small-scale residential design, from tiny-homes, to prefab, and movable residences. Students learn Small Home design, methods, and techno-systems, then using green materials, they design and fabricate architectural elements and furniture for enhancing small-scale living. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3807. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6390 - Special Topics in Technology (3 Credits)

Various topics in technology, according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Technology Studies Area.

ARCH 6412 - Construction Documents (3 Credits)

Introduces the concepts and techniques of construction documents. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6413 - Construction Leadership (3 Credits)

The final course is an integrated architecture, engineering, and construction business course bringing together executives, principals, and managers to current industry topics and provide students opportunities to apply management and leadership principles from the various fields to case study projects. Crosslisted with CVEN 5238.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6420 - Integrated Practice & BIM Technology (3 Credits)

This class will be a general overview of integrated practices and technologies used in today's industry. Understanding the nature of how information is created and managed using BIM technologies will help us define a road map for how information passes downstream and bring value to a project. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6450 - Pre-Design (3 Credits)

Course lectures, readings, and case studies cover pre-design methodologies, research, documentation, facilitation and consensus building. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6463 - BIM: Emerging Prof. Practices (3 Credits)

The 21st century architect's emerging role is designing the design process. BIM (Revit) attempts to optimize the entire process, including all participants, from conceptual design, through post-building occupancy. These capabilities are explored and developed. Prereq: ARCH 5430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6464 - BIM: Advanced Design Concepts (3 Credits)

BIM's complexity (Revit) challenges all designers. The emerging tool is very sophisticated, but its benefit are not realized from modeling alone. We address architectural design as a multifaceted optimization process: concept, form, and function. Prereq: ARCH 5430. Cross-listed with ARCH 6390. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6470 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with LDAR 6470 and URPL 6850. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6471 - Managing Quality & Risks (3 Credits)

A lecture and seminar on approaches to risk management including contracts, insurance, financial analysis, dispute resolution and client relationships. Utilizing case study approach, quality assurance will be defined and studied in the design and building phase of workings. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6472 - Architecture in a Single Source Project Delivery (3 Credits)

Directed to the practice of architecture with design build and other single source delivery systems. This course examines requirements of codes, zoning, building systems and legal questions for the architect. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6473 - Research Tools & Methods (3 Credits)

Introduces the thesis in architecture and establishes the scholarly basis for the research and construction of a Master's Thesis project. This course will provide the student with the research practices and methodologies to develop the scholarship and products required to produce a Thesis Project Proposal. Completion of this course is a prerequisite for the student to submit the Thesis Proposal for departmental approval to continue with the remaining 9 credits of thesis work. Cross-listed with LDAR 6949. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6475 - BIM/Flow of Information (3 Credits)

The course is geared toward CAP students, non-degree seeking working professionals and other students interested in the Integrated Construction, Management and Leadership (ICML) Certificate. This class will be a general overview of Virtual Design and Construction (VDC) in today's AEC industry. Restriction: Graduate students. Junior standing and above undergraduate students are eligible to take course with approval by instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

ARCH 6490 - Special Topics in Professional Studies (3 Credits)

Various topics in professional studies according to current faculty and student interests. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

Additional Information: AP Professional Studies Area.

ARCH 6510 - Digital Applications in Design (3 Credits)

This course introduces first year design students to the Graphic Design Concepts and Digital Applications necessary to create digital, printed and physical presentations of their work. Students learn computer skills including: raster and vector based programs and digital modeling. Prereq: ARCH 5110 and ARCH 5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6515 - Adv. Digital Representation (3 Credits)

In this course students will learn advanced techniques of architectural representation using digital modeling, rendering engines, and post processing in the Adobe Creative Suite. Prereq: ARCH 5510 and 6510 or equivalent. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6530 - The Art of Proportion (3 Credits)

This course covers the use of proportional systems in the Classical tradition. Students complete a series of graphic exercises culminating in the construction of a Beaux-Art style ink-wash of a classical column. Cross-listed with ARCH 6290 and HIPR 6090. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6550 - Digital Portfolio Design (3 Credits)

This course introduces students to the Graphic Design Concepts and the Digital Applications used to create both Printed and Web-based Portfolios. Students must have completed ARCH 5110 and have a working knowledge of Photoshop. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6560 - Architecture Photography (3 Credits)

Emphasizes and understanding of light, composition, color and problem solving, with a particular goal of applying these skills to the photography of architectural exteriors and interiors. For students who have access to adjustable 35 mm digital cameras. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6570 - Sketching As Seeing (3 Credits)

Sketching promotes seeing, and seeing promotes thinking. This course is designed to help you think & see by the regular practice of sketching & the discipline of keeping a sketchbook. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6575 - 2D-3D & 4D Design Space (3 Credits)

The graphics language of words and art bridge intention and design. Passing ideas and mental imagery through digital technology's 2D, 3D and 4D filters is the challenge. Students develop concepts in AutoCAD, visualize in 3DStudio Max, and narrate the process in Adobe Premiere. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6580 - High-Performance Façade Design (3 Credits)

It is the intent of the course to provide graduate students with a comprehensive understanding of the technical concepts and specific skills necessary to undertake in actual practice the design, detailing, specification, and construction administration of high-performance building facades. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max Hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6590 - Special Topics in Representational Studies (3 Credits)

Various topics in representational studies, according to current faculty and student interests. Prereq: ARCH 5510. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6710 - Architecture in Other Cultures (1-9 Credits)

Various studies of architecture and urbanism in foreign countries. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6715 - The Built Environment in Other Cultures I: Research Design (3 Credits)

The intent is to broaden students' perspectives by asking them to examine design within another culture. Each student prepares a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken and the nature of the report to be produced. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6755 - Rome: Architecture & Urbanism (3 Credits)

The objective of this course is to provide a broad overview of the city's major architectural sites, topography, infrastructure and systems of urban design and organization through the study of the rich palimpsest of buildings, piazzas and landscapes from antiquity to the present day. Coreq: ARCH 6760. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3693. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: ARCH 6760. Restriction: Restricted to ARCH graduate students.

ARCH 6760 - Rome: Documentation, Analysis and Design (3 Credits)
 With graphic representation as the primary mode of inquiry, this course is an intensive study of a single building, piazza or landscape within the rich urban fabric of Rome. The graphical inquiry will be supported by pre-departure research and onsite observation and presentations. Coreq. ARCH 6755. Restriction: Restricted to ARCH graduate students. Cross-listed with ARCH 3694. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Coreq. ARCH 6755. Restriction: Restricted to ARCH graduate students.

ARCH 6775 - Bluff General Elective (3 Credits)
 Provides students the opportunity to focus their attention on one of three areas: technical studies, professional studies, or cultural studies. Students will complete coursework as it relates to Design Build Bluff. Counts as a general elective. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

ARCH 6840 - Independent Study (1-3 Credits)
 Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to architecture. Prereq: Permission of instructor. Repeatable. Max Hours: 9 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 9.

ARCH 6910 - Teaching Assistantship (3 Credits)
 Work with a faculty member in a course to help with class preparation and delivery. This is intended for students who may be considering a career in teaching architecture. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 6.

ARCH 6930 - Architecture Internship (3 Credits)
 Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.
 Grading Basis: Pass/Fail Only

ARCH 6931 - Architecture Internship (3 Credits)
 Designed to provide professional practice experience. The internship is composed of eight hours per week working in a practicing professional's office during the regular semester. Students must complete the second-year level before taking this course. Max hours: 3 Credits.
 Grading Basis: Pass/Fail Only

ARCH 6950 - Thesis Preparation (3 Credits)
 In place of the final advanced design studio, students may choose to develop a specialized thesis in some topic related to architecture. The thesis will normally take three semesters, starting with the three-credit hour ARCH 6473, Research Tools & Methods in the spring semester, this course in the fall semester and finishing with a six-credit thesis class in the third semester. A thesis may culminate in a design or in a written report. A thesis is expected to advance the field in some way by offering new insights into aspects of design, technology, history or professional principles. Prereq: ARCH 6490 and completion of at least one advanced design studio (ARCH 6170 or ARCH 6171). Max hours: 3 Credits.
 Grading Basis: Letter Grade with IP
 Additional Information: Report as Full Time.

ARCH 6951 - Architecture Thesis (6 Credits)
 Development of a master's thesis (see ARCH 6950 above). Prereq: completion of two advanced design studios ARCH 6150 and ARCH 6950. Max hours: 6 Credits.
 Grading Basis: Letter Grade with IP
 Additional Information: Report as Full Time.

ARCH 7840 - Independent Study (1-3 Credits)
 Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to majors within the College of Architecture and Planning

Bioengineering (BIOE)

BIOE 5010 - Cell and Molecular Biology for Bioengineers (3 Credits)
 Introduction to cellular and molecular biology, with a focus on using engineering methods and literature to analyze structure and function of cells throughout lifecycle and multiple scales. Design experiments to test hypotheses. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5011 - Systems Physiology for Bioengineers (3 Credits)
 Use engineering principles to study key physiological systems. Topics: cardiovascular, neuroscience, urological, or renal medicine. Related engineering principles: pressure-flow relationships, stress-strain, electromechanical coupling and signal transduction. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

BIOE 5020 - Analytics and Machine Learning in Bioengineering (3 Credits)
 This course provides mathematical tools essential for graduate level bioengineering work. Studies selected topics from probability, linear algebra, and vector calculus, with emphasis on bioengineering applications. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

BIOE 5021 - Numerical Methods for Engineering Analysis (3 Credits)
 Provides computational skills and knowledge of numerical methods for engineering/scientific computation using Matlab. Topics: root finding, interpolation, difference and integration rules, solution of initial and boundary value ODEs, and introduction to the solution of PDEs. Prereq: Graduate standing in Bioengineering or instructor permission. Max Hours: 3 Credits.
 Grading Basis: Letter Grade

BIOE 5039 - Mechatronics and Embedded Systems (3 Credits)

The course focuses on the design and construction of microprocessor-controlled electro-mechanical systems. Lectures review critical circuit topics (Ohm's law, RLC circuits, DC and AC signals, diode and transistor circuits, operational amplifiers, and digital signals), introduce microprocessor architecture and programming, discuss sensor and actuator component selection, robotic systems, and design strategies for complex, multi-system devices. Lab work reinforces lectures and allows hands-on experience with robotic and embedded systems design. Students must design and build an embedded systems device related to assistive technology. Note: Project expenses may be incurred (\$50 maximum). Cross-listed with BIOE 4039. Restriction: Restricted to graduate students in the Department of Bioengineering. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5040 - Research Methods for Bioengineers (2 Credits)

This course provides an introduction to research methods for bioengineers in order to prepare for basic research, clinical applications and commercialization of medical technologies. Topics include literature review, regulatory policy. Prerequisite: Graduate standing in Bioengineering (MS/PhD). Max Hours: 2 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

BIOE 5041 - Clinical Experiences for Bioengineers (1 Credit)

This course provides opportunities for clinical experiences such as observing surgeries and touring intensive care units to prepare students for clinical applications and foster collaborations with clinical practitioners. Experiences take place through the school year. Prerequisites: Graduate standing in Bioengineering (MS/PHD). Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Typically Offered: Fall.

BIOE 5053 - Optics & Microscopy in Biomedical Research (3 Credits)

Graduate overview of optical imaging, ranging from classical microscopy to advanced non-linear techniques and includes theory, technology and applications in biomedical sciences. This will prepare students for developing and applying state-of-the-art optical imaging in their research. Cross-listed with BIOE 4053. Prereq: Grad standing or permission from the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5054 - Regulatory Affairs (3 Credits)

This course covers standards of quality assurance and regulatory pathways that guide biomedical engineering industry. Cross-listed with BIOE 4054. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5057 - Rehabilitation and Assistive Technology (3 Credits)

This course provides students with an overview of technologies and their use by and for persons with disabilities. Cross-listed with BIOE 4057. Restriction: Restricted to students with BIOE designation, or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5058 - Intro to Design, Disability, and Aging (3 Credits)

This course provides an introduction to the topic of disability and aging and the application of bioengineering principles for persons living with functional impairment(s) across the lifespan. Cross-listed with BIOE 4058. Restriction: Restricted to BIOE majors or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5063 - 3D Modeling for Bioengineers (3 Credits)

Course instills 3D modeling skills specific to biomedical industry. Topics include computer aided design, medical imaging, image processing, patient specific image to three-dimensional model reconstruction, non-uniform rational b-spline surfaces, finite element, computational fluid dynamics analyses, physical modeling using rapid prototyping. Restrictions: Matriculated CEDC students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

BIOE 5064 - Advanced MatLab For Bioengineers And Life Scientists (3 Credits)

MatLab programming for graduate bioengineers and life scientists. Topics include MatLab syntax and optimization as well as techniques for working with scalars, time-series, images and multi-dimension datasets. Surface/Curve fitting, modeling, automation and classification will be covered. Cross-listed with BIOE 4064. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5067 - Human Factors and Usability Testing for Bioengineers (3 Credits)

This course provides an introduction to human factors testing and evaluation in the context of medical devices and assistive technology (AT). Particular focus will be given towards designing and applying usability testing to inform product design decisions or improvements. Topics include human factor considerations for aging and disabled populations (and their care providers), usability techniques, user experience data collection and interpretation, etc. Students will engage in hands-on human factors assessments such as contextual inquiry of surgery patients, cognitive walkthroughs with simulating disability, and product usability testing and iteration. Max hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5068 - Introduction to Medical Imaging (3 Credits)

This course will introduce graduate students to the basic physics, technologies, and clinical methodologies underlying Ultrasound, MRI, CT, PET and SPECT imaging systems. The course will include lectures, and visits to campus hospital and research imaging systems as well as hands on ultrasound labs. Cross-listed with BIOE 4068. Restriction: Restricted to Bioengineering students with graduate student status. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Bioengineering students with graduate student status.

BIOE 5069 - Advanced Biomechanics for Graduates (3 Credits)

This course covers advanced topics such as blood flow dynamics, introduction to non-linear finite deformation techniques, blood rheology, and computational techniques. Restriction: Restricted to Bioengineering students with graduate student status, or by Permission of Instructor. Crosslisted with BIOE 4069. Max Hours: 3 credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

BIOE 5073 - Neural Interfaces and Bionic Limbs (3 Credits)

This course will introduce graduate students to topics in neural interfaces (Brain machine interfaces, peripheral nerve interfaces etc), the issues involved in the design of mechatronic limb systems and the decoding algorithms used to map the neural interface to the mechatronic limb.

Cross-listed with BIOE 4073. Restrictions: Matriculated CEDC students.

Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

BIOE 5074 - Introduction to Laboratory Animal Research (3 Credits)

This course provides basic theoretical and practical knowledge on the use of the most common laboratory animal species, animal models and welfare, general concepts on animal biology and husbandry, and essential principles of anesthesia, analgesia, surgery and peri operative care. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5083 - Polymers in Biomedical Applications (3 Credits)

This course will introduce graduate students to fundamental synthetic method and basic characteristics of various polymeric biomaterials and their crucial roles in different biomedical applications. It will also cover how the polymers can be modified to enhance biomedical applications. Cross-listed with BIOE 4083. Prereq: Graduate standing at CU Denver or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

BIOE 5420 - Special Topics in Bioengineering (1-6 Credits)

Special topics of particular interest to graduate students in Bioengineering. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

BIOE 5840 - Independent Study in Bioengineering (1-6 Credits)

Graduate level independent study in Bioengineering with a faculty mentor. Prereq: Graduate standing within the Department of Bioengineering or permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

BIOE 5939 - Graduate Internship (1-6 Credits)

Department of Bioengineering Internship. Credit may not be applied toward the MS in Bioengineering degree. Enrollment by department permission only. Max Hours: 6 Credits.

Grading Basis: Letter Grade

BIOE 6655 - Foundations of Doctoring MS Years (1-5 Credits)

This course is for CU MD-MS students who are on leave of absence from SOM and wish to maintain clinical exposure and training during the leave. Prereq: Phase I & II SOM classes and graduate standing in BIOE.

Repeatable. Max Hours: 20 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 20.

Restriction: Restricted to BIOE graduate majors within the College of Engineering, Design and Computing

BIOE 6950 - Masters Thesis (1-6 Credits)

Research for Master Thesis under supervision of faculty thesis advisor.

Prerequisites: Consent of thesis advisor. Restrictions: Satisfactory progress toward MS-Bioengineering degree. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

BIOE 6960 - Master's Project (1-6 Credits)

Training for Master's Project under the supervision of faculty project advisor.

Prereq: Department Consent. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

BIOE 8990 - Doctoral Dissertation (1-10 Credits)

Research for doctoral dissertation under supervision of faculty advisor.

Prerequisites: Consent of dissertation advisor. Restrictions: Satisfactory progress toward PhD-Bioengineering Degree. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

Biology (BIOL)

BIOL 5024 - Introduction to Biotechnology (3 Credits)

Introduces aspects of biotechnology within a historical context, including medical, forensic, agricultural and microbial biotechnology. Addresses principles behind state-of-the-field techniques in recombinant DNA technology, bioinformatics, proteomics and genomics. Biotechnology regulations and ethics will also be discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4024. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus.

BIOL 5050 - Advanced Biology Topics (1-8 Credits)

Examines current topics in the field of biology. Topics vary from term to term. See Schedule Planner for current topics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4050.

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 5052 - Advanced Ecology (3 Credits)

This combination seminar and lecture course focuses on state-of-field knowledge, current theories and recent models in selected areas of ecology, such as theoretical ecology, evolutionary ecology, population biology and ecosystems ecology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4052. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5053 - Disease Ecology (3 Credits)

The study of the underlying principles that influence the spatio-temporal patterns of infectious disease in environments. Students will apply ecological theories about concepts such as biodiversity, trophic interactions, landscape structure, and nutrient cycling to the study of disease. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4053. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5055 - Virology (3 Credits)

This is an upper level undergraduate/graduate class providing an in-depth study of the history of virology, different types of viruses, viral disease, research to combat viral infections, and different uses of viruses in biotechnology. Note: Students will not earn credit for this course if they have already earned credit for BIOL 4051 or BIOL 5051. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4055. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5064 - Cell Biology of Disease (3 Credits)

Builds on the foundations laid in the prerequisite courses. How alterations in membrane transport, autophagy, mitochondria, lysosomes, cilia, unfolded protein response and autophagy lead to major human diseases. A major emphasis is the control and integration of cellular activities. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4064. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5125 - Molecular Biology Lab (3 Credits)

Provides hands-on experiences in molecular biology and an appreciation for using the tools of molecular biology to study biological systems. Emphasis is placed on DNA cloning, PCR, mRNA and protein detection in the context of gene editing. Experimental design and the theories underlying the techniques are also discussed. Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus. Cross-listed with BIOL 4125. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree granting graduate programs on the downtown campus as well as the School of Medicine on the Anschutz Medical campus.

BIOL 5126 - Molecular Genetics (3 Credits)

Examines molecular techniques and their application to experimental genetics, specifically organization and mapping of genomes, application and model systems in defining hereditary components of disease, and mechanisms of identifying mutations and their implications for disease. Also addresses application of recombinant DNA technology. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4126. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5134 - Human Genetics (3 Credits)

Advanced survey of the current status of the field. Emphasis on understanding, diagnosis and treatment of genetic disease and on the impact of molecular biology on human genetics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4134. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5144 - Medical Microbiology (3 Credits)

Provides an understanding of the relationship between pathogenic organisms and their host. Emphasis is placed on the area of medical bacteriology, with attention given to mechanisms of pathogenesis, genetics of disease, serology and treatment. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4144. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5154 - Conservation Biology (3 Credits)

Basic concepts and theories in population biology and genetics as they apply to issues relating to the preservation of biodiversity, such as the genetics of small populations, captive propagation, restoration ecology and the design of nature reserves. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4154. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5165 - Neurobiology (3 Credits)

Overview of neuroscience, covering the cellular basis of neuronal activity, muscle, sensory structures and the structure and function of the human brain. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4165. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5225 - Genomics and Bioinformatics (3 Credits)

Explores how genome-wide data are collected and analyzed. Example applications include human disease, microbial evolution, ecological genomics, and parasite drug resistance. Students implement projects based on real DNA sequencing data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4225. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5250 - Mechanisms of Animal Behavior (3 Credits)

The proximate and ultimate mechanisms of animal behavior are analyzed using comparative animal examples from the scientific literature.

Proximate mechanisms include genetic and physiological processes. Ultimate mechanisms include the role of natural and sexual selection in the evolution of behavior. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4250. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5335 - Plant Science (4 Credits)

Lecture, lab and field trips. An in-depth study of flowering plants, including embryology, structure, function, reproduction, ecology and evolution of the group. Emphasis is placed upon morphology and anatomy at all stages of plant development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4335. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5345 - Flora of Colorado (4 Credits)

Lecture, lab and field trips. Introduces the vascular plant flora of Colorado, including ferns, gymnosperms and flowering plants. Emphasis on field identification of species representing a range of natural communities from grassland to alpine tundra, as well as non-natives. Field and herbarium techniques covered. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4345. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5415 - Microbial Ecology (3 Credits)

An in-depth study of ecology as it relates to microorganisms; abiotic and biotic interactions within microbial populations in macro- and microhabitats; and the role of microorganisms in maintaining steady state conditions in natural ecosystems. Emphasis is placed on how the ecology of microorganisms affects the human condition. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4415. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5425 - Biogeography (3 Credits)

An in-depth study of biological populations through analysis of geographic distribution patterns in space and time. Emphasis on how biogeography informs studies of evolution and ecology and on applied studies in conservation, sustainability, epidemiology, and disease dynamics. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4425. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5430 - Introduction to Spatial Ecology (3 Credits)

Focuses on patterns of life and ecological interactions in space. Emphasis on drivers of patterns, practical application of spatial ecology software, programming, and introductory spatial statistics on the quantification of patterns. Main topics: Scale and scaling, pattern development, detecting and characterizing patterns, temporal dynamics, and implications of spatial structure to conservation biology, resilience, and ecosystem functioning. Cross-listed with BIOL 4430. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5460 - Environmental Toxicology (3 Credits)

Text and literature-based course provides students with background knowledge concerning environmental toxins, the nature and extent of environmental contamination, and toxicant effects on individual organisms and populations. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5464 - Exercise Physiology (3 Credits)

This course addresses the dynamic physiological changes associated with exercise. Where human physiology addresses physiological processes at rest, this course explores how the cardiovascular, respiratory, nervous and endocrine systems support increased energy transfer as skeletal muscle becomes more active. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4464. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5494 - Population and Evolutionary Genetics (3 Credits)

Introduces the genetic processes underlying evolutionary change in microbial, plant and animal populations. Topics include: sources of variation, Hardy-Weinberg equilibrium, population genetic structure, natural selection and other evolutionary forces, quantitative genetics and molecular phylogenetics. Emphasis on experimental data. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4494. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5550 - Cell Signaling (3 Credits)

Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4550. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5634 - Biology of Cancer (3 Credits)

Cancer is the second leading cause of death in the United States. This course offers an overview of recent research into the causes, treatments and possible prevention of cancer. Includes a detailed look at the mechanisms of action of various oncogenes. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4634. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5644 - Advanced Human Anatomy Laboratory (2 Credits)

Advanced laboratory course in human anatomy. In-depth look at the structural aspects of the human body, emphasizing function. Models, microscope slides, and visual media will supplement cadaver-based dissections. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4644. Term offered: fall, spring. Max hours: 2 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5815 - Structural Biology of Neurodegenerative Diseases (3 Credits)

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 4815. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5825 - Biochemistry of Metabolic Disease (3 Credits)

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, CHEM 5825, and BIOL 4825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5835 - Biochemistry of Gene Regulation and Cancer (3 Credits)

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs Cross-listed with CHEM 4835, CHEM 5835, and BIOL 4835. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5840 - Independent Study: BIOL (1-3 Credits)

Note: Registration by special processing form only. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to degree-granting graduate programs

BIOL 5910 - Field Studies (3 Credits)

Field studies of individuals, populations and communities comprising a specified ecosystem. Emphasis on field identification of vascular plants and vertebrate animals. Topics include the physical environment, biotic and abiotic interactions, life history, ecological adaptations and biogeography. Note: Lectures and a week-long field trip. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4910. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 5939 - Internship (1-6 Credits)

Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval.

Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 5974 - Advanced Evolution (3 Credits)

A capstone course that draws upon concepts from all fields of biology. Topics include the fossil record mass extinctions, the historical development of the modern synthesis, principles and mechanisms of evolution, current viewpoints and controversies. Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4974. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6002 - Biology Skills Sets - Pedagogy (2 Credits)

The purpose is to introduce sound practice in teaching and innovation in pedagogy. Topics covered will include assessment techniques, creation of learning goals, and research methods in biological education. Restriction: Restricted to degree-granting graduate programs. Term offered: fall. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6655 - Seminar (1 Credit)

Restriction: Restricted to degree-granting graduate programs. Cross-listed with BIOL 4990. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

BIOL 6705 - Biological Research Workshop (2 Credits)

For graduate and advanced undergraduate students who are directly engaged in original research. Provides introduction to the discovery dissemination and peer review process associated with writing research proposals, manuscripts, and grants, as well as poster and oral presentations. Students will workshop each other's original research. Graduate students enroll in 6705; research-active undergraduates enroll in 5705. Cross-listed with BIOL 5705. Prereq: Students involved in original research and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Restriction: Restricted to degree-granting graduate programs

BIOL 6764 - Biological Data Analysis (4 Credits)

Addresses quantitative aspects of research design, data collection and analysis in the biological sciences. Emphasizes relationships among probability theory, estimation, testing, inference, and interpretation. Includes intensive computer lab using the statistical programming software R to demonstrate both traditional analytical and contemporary simulation based (permutation, bootstrap, and Bayesian) approaches for inference in biology. Restriction: Restricted to degree-granting graduate programs. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 6880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to degree-granting graduate programs

BIOL 6950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

Additional Information: Report as Full Time.

BIOL 7010 - Integrative and Systems Biology (3 Credits)

Addresses current research problems in integrative biology and system biology by surveying the peer-reviewed literature. Particular attention will be paid to research topics that integrate multiple levels of biological organization and that investigate how properties of systems emerge from interactions of sub-units. Note: New students in the Integrative and Systems Biology PhD program will enroll in this course during their first year. Restriction: Restricted to degree-granting graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

BIOL 7050 - Special Topics (1-3 Credits)

Readings in current biology topics. Specific topics vary and may be proposed by groups of graduate students who identify a suitable faculty instructor or by a faculty member who identifies a need for advanced study in a specialized topic of biology. Restriction: Restricted to degree-granting graduate programs. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 7650 - Research in Integrative and Systems Biology (1-10 Credits)

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Ph.D. student and permission of instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 10 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 10.

Restriction: Restricted to degree-granting graduate programs

BIOL 7920 - Directed Reading/Grant Writing (3 Credits)

Allows students to examine current literature related to their specialty area of biological research and to work in collaboration with a research mentor to develop a grant-based dissertation proposal in preparation for the comprehensive review examination. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to degree-granting graduate programs

BIOL 8990 - Doctoral Dissertation (1-10 Credits)

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Students must be in the Integrative and Systems Biology PhD program and have permission from the instructor. Restriction: Restricted to degree-granting graduate programs. Term offered: fall, spring, summer. Repeatable. Max hours: 60 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 60.

Restriction: Restricted to degree-granting graduate programs

Additional Information: Report as Full Time.

Business (BUSN)

BUSN 5939 - Internship (1-3 Credits)

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6520 - Leading Individuals and Teams (3 Credits)

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6521 - Leading Individuals and Teams (3 Credits)

Students learn the strengths and weaknesses of their management style and how to work effectively with individual differences. Students also learn how to form teams around purpose/task, diagnose problems and identify and implement solutions by utilizing leadership skills such as setting goals, processes and measures, interpersonal communication, motivation and conflict management. Students develop an understanding of the effect of the organizational and social context on the behavior of individuals and teams. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

BUSN 6530 - Data Analytics for Managers (3 Credits)

Provides an overview of techniques for data analysis, including multiple regression, sampling theory and applications of probabilistic inference from sample data. The emphasis is upon the applications of these techniques to management problems. Students are required to analyze data sets, present their analyses in written or oral form and defend their conclusions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6540 - Legal and Ethical Environment of Business (3 Credits)

Students develop a working knowledge of legal and ethical parameters for business decision making. The course addresses the legal system and mechanisms for resolving disputes. Topics include constitutional law, torts, product liability, contracts, property law, consumer protection, intellectual property, business entities and employment law. It stresses the influence of legal issues on organizational decision making. Note: Students can substitute ENTP 6822 but credit cannot be received for both. Health Administration students must take BUSN 6541. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6541 - Legal and Ethical Environment of Business (Health Section) (3 Credits)

Students develop a working knowledge of legal and ethical parameters for business decision making. Addresses the legal system and mechanisms for resolving disputes. Topics include business entities, torts, contracts, employment relationships, litigation and alternative dispute resolution. It stresses the influence of legal issues on organization and decision making. The emphasis is on health care issues and is intended for health care students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Spring.

BUSN 6550 - Analyzing and Interpreting Accounting Information (3 Credits)

Emphasizes the use of accounting statements and data in making business decisions. External financial accounting information and concepts are used for investment and credit decisions. Internal managerial accounting information and concepts are used for product costing, cost analysis and management control. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6560 - Marketing Dynamics in the 21st Century (3 Credits)

This course focuses on the art, science, and practice of managing dynamic market environments and making decisions about alternative marketing strategies. Students use analytical frameworks to inform decision-making about the many specific aspects of marketing: e.g., value proposition, target markets, positioning, products, channels of distribution, pricing, communication, and service. Participants learn how to integrate these elements into a Marketing Plan. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6561 - Marketing Dynamics in the 21st Century (Health Section) (3 Credits)

Focuses on the formulation and implementation of a marketing plan in the context of the firm's strengths, overall strategy and competitive environment. Emphasis is on understanding the marketing environment and on decision making skills regarding market selection, pricing, promotion, product configuration and management of distribution channels. Restrictions: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to HLAD and MBAH majors within the Business School.

BUSN 6610 - Information Systems Strategy (3 Credits)

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Note: Students cannot receive credit if they have taken BUSN 6810 or ISMG 6180. Cross-listed with ISMG 6180. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring, Summer.

BUSN 6620 - Applied Economics for Managers (3 Credits)

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firms interactions with its competitive market environment. Students will learn basic aspects of federal macroeconomic policy designed to achieve stable prices and economic growth. Also, they will learn to understand the measurement of output (GDP), employment and prices; the conduct of monetary and fiscal policy; and the balance of trade. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6621 - Applied Economics for Managers (Health Section) (3 Credits)

After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firm's interactions with its competitive market environment. Students should understand basic aspects of federal macroeconomics policy designed to achieve stable prices and economic growth. Also, they should understand basic aspects of government regulation of business. The emphasis is on healthcare issues and is intended for healthcare students. Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6550 or ACCT 6030 or ACCT 6031 and BUSN 6530 or FNCE 6290 or BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

BUSN 6630 - Management of Operations (3 Credits)

This course is concerned with the production and delivery of goods and services. It provides an overview of a variety of contemporary Operation Management topics using current techniques and modeling to solve and understand key issues. Basic Excel skills are required. The use of model-assisted decision making is emphasized. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Fall, Spring, Summer.

BUSN 6640 - Financial Management (3 Credits)

This course is concerned with the business firm's decisions to make investments and to finance its operations. Students learn to use the tools and theories underlying business valuation, cost of capital, capital budgeting and capital structure. Students will learn to evaluate a firm's financial position through the examination of its financial statements and to prepare pro forma statements for the firm. Prereq: BUSN 6550 with a grade of C or better. Coreq: BUSN 6620 or BUSN 6621. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6550 with a grade of C or better Coreq: BUSN 6620 or BUSN 6621 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BUSN 6710 - Strategic Management (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for an enterprise. Students gain an understanding of strategy formulation and implementation within the context of the global environment. Cross-listed with MGMT 6620. Note: Students may not receive credit for both BUSN 6710 and MGMT 6620.

Note: This course is intended as a final semester Capstone course.

Coreq: BUSN 6560 or 6561, BUSN 6630 or BUSN 6631; and BUSN 6640.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 or 6561, BUSN 6630 or BUSN 6631; and BUSN 6640

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

Typically Offered: Fall, Spring, Summer.

BUSN 6711 - Strategic Management (Health Section) (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for a health delivery organization.

Students gain an understanding of strategy formulation and implementation within the context of the managed care environment.

Emphasis is on the integration of knowledge acquired in the previous

functional area courses. Note: This course is intended as a final semester course. Required of Health Administration majors. Coreq: BUSN 6560 or

BUSN 6561, and BUSN 6640. Restrictions: Restricted to HLAD and MBAH

majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Corequisites: BUSN 6560 or BUSN 6561, and BUSN 6640 Restrictions:

Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Spring.

BUSN 6800 - Topics In Business (3 Credits)

Current topics in business are occasionally offered. Prerequisites vary depending on the material covered. Consult the current 'schedule planner' for specific offerings and prerequisites. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6807 - Analyzing Emerging Opps & Planning During Uncertain Time (3 Credits)

To develop strategic thinking and practical planning skills. Prepare students for the dynamic and uncertain business environment today. More specifically, we explore how to think innovatively and spot trends, develop formal business plans around emerging opportunities, address uncertain and volatile situations using scenarios. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6811 - IT and New Business Paradigms (3 Credits)

Introduces graduate students to the relationship between information technology and the other functional areas of the business. During the course, students have an opportunity to listen and learn from guest speakers who have been involved with either guiding or interpreting the impact of information technology among functional areas of existing or new business. Through the use of current readings, guest lectures and case analysis, students examine various models of IT and new business paradigms to determine the decisions and success criteria for integrating IT in ongoing business. A unique feature of the class will be the opportunity for students to present proposals and projects to be critiqued by individuals with IT or business experience. Those individuals provide feedback and perspectives regarding potential IT or new business paradigm activities. Prereq: Permission of instructor. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6812 - Business Intelligence and Analytics (3 Credits)

This course covers business intelligence, analytics, and artificial intelligence technologies and is organized around three types of analytics that are enabled by those technologies: descriptive, predictive, and prescriptive analytics. The theme of artificial intelligence runs throughout the course from business intelligence, to machine learning and deep learning as applied in areas such as computer vision, autonomous vehicles, and robots. The topics will be discussed using concepts and theory, business cases and applications, and hands-on analysis or model building using datasets available in the public domain, with the hands-on analysis and model building being the focus of the course. Students will use a leading BI software and a cloud computing platform to perform analysis and build machine learning models. Note: The recommended prerequisite for this course is ISMG 6080. If you are familiar with SQL and have worked with databases in the past, you satisfy the prerequisite requirement for this course. Cross-listed with BUSN 6812/ISMG 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6840 - Independent Study (1-3 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BUSN 6860 - Finance in the Sports Entertainment Industries (3 Credits)

This course explores the problems and solutions of financing in sports and entertainment business. It focuses on stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues and managing disparate revenue streams. The course utilizes speakers, articles, problem sets and cases. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Business Analytics (BANA)

BANA 5939 - Internship (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

BANA 6610 - Statistics for Business Analytics (3 Credits)

Provides a conceptual overview of statistical thinking and its applications to business problems. Topics include descriptive statistics, data exploration, probability, inferential methods, regression analysis, classification, regression with high dimensional data, etc. Students gain hands-on experience with data analytic problems via projects using real business settings and data. Restriction: Restricted to MS BANA majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to BANA-MS students within the Business School.

BANA 6620 - Computing for Business Analytics (3 Credits)

Introduces database and modeling software used by business analytics professionals. Includes querying relational databases, state-of-the-art statistical freeware, and modeling software. Students learn to obtain, organize, and store data needed for analytics projects, undertake data cleansing for big data tasks, and conduct statistical data visualization. Restriction: Restricted to BANA-MS students within the Business School. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to BANA-MS students within the Business School.

BANA 6630 - Time-Series Forecasting (3 Credits)

Time series analysis is critical to industries such as finance, marketing, retail, and accounting. This course introduces time-series models with emphasis on their practical applications in business. The goal is to show how dynamic financial and economic data can be modeled and analyzed using proper statistical techniques. The topics include methods for trend and seasonal analysis and adjustment, modeling and forecasting with autoregressive moving average (ARMA) processes, and model identification and diagnostics for time series. Other subjects include volatility and state space models. This course provides hands-on experience by pairing lectures on methodology with lab sessions using R to perform real-world data analyses. If you do not meet the prerequisites you may contact the instructor for permission to register. Prereqs: BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Can only receive credit for either BANA 6630/DSCI 6230. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6640 - Decision Analysis (3 Credits)

Introduces a quantitative approach to business decision making under conditions of risk and uncertainty. Emphasis will include introductions to decision analysis theory, risk analysis, utility theory, multi-criteria decision making, Bayesian decision analysis and hierarchical structured models. Psychological issues and qualitative approaches in the decision-making process will be discussed. Student computer-assisted projects are included. Prereq: BANA 6610 or permission from instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6650 - Project Management (3 Credits)

Introduces the topic of Project Management (PM) in a business environment. Emphases will include the knowledge, skills, tools, and techniques as presented in the Project Management Body of Knowledge (PMBOK), a variety of managerial aspects commonly encountered in PM, and current extensions of PM. Projects in diverse contexts are examined. Cross-listed with URPL 6249. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BANA 6660 - Predictive Analytics (3 Credits)

Addresses statistical and machine-learning approaches to prediction using the very large data sets increasingly common in business applications such as internet-based business, fraud detection, credit scoring and market segmentation. Methods covered in the course include data partitioning, logistic regression, clustering, decision trees, dimension reduction, and neural networks, among others. Emphasis is placed on proper choice of method and understanding of the strengths and limitations of competing methods. Students are expected to analyze and report on a variety of data sets drawn from business application areas. If you do not meet the prerequisites listed, you may contact the instructor for permission. Prereq: BANA 6610 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: BANA 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6670 - Prescriptive Analytics with Optimization (3 Credits)

Optimization is a key part of Business Analytics dealing with decision problems that lend themselves to modelling and analysis designed to determined optimal decisions. In this course, we'll study methodologies for determining the best course of action in situations with a large number of alternatives, each with their own financial or other characteristics, including restrictions on our actions that must be satisfied as we search for best solutions. While the focus of the course is on modeling and solving a wide variety of optimization problems, we'll also cover the basic mathematical underpinnings of linear programming, the most widely used form of optimization in industry and government and the foundation of many extensions into other classes of optimization. State of the art Software for solving optimization problems will be used throughout the course. Students will work in teams on a project involving optimization and some important problem. Restriction: Restricted to BANA-MS students within the Business School. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to BANA-MS students within the Business School.

BANA 6680 - Optimization for Machine Learning (3 Credits)

This course will give an introduction on numerical optimization algorithms in the context of machine learning applications. We shall discuss how optimization problems arise in machine learning and what makes them challenging. Topics include traditional nonlinear optimization, linear optimization and discrete optimization with an emphasis on effective computational techniques. We shall also talk about next generation large-scale machine learning algorithms such as stochastic gradient (SG) method. Applications to a variety of areas such as text mining and neural networks are also stressed through class projects. Problems will be solved using appropriate software tools. Prereq: BANA 6620 and BANA 6670. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BANA 6620 and BANA 6670. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6690 - Network Modeling (3 Credits)

This course introduces network modeling. Utilizing data and metadata, programming, algorithms, statistical analysis, and visualization; networks are studied. The focus is on Business Applications to provide managerial insights and recommendations and will include transportation, social, transactional, electrical and communication networks. Prereq: BANA 6620. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BANA 6620. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

BANA 6720 - Simulation Modeling (3 Credits)

Students learn to model and analyze complex dynamic systems using state-of-the art software. Illustrative application areas include production systems, service systems, distribution systems and health care systems. Topics include creating reliable simulation models, analyzing the input and output from the model, and managing simulation projects. A substantial part of the course will be devoted to student projects where students define, model and analyze a significant system of their choosing. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6730 - Supply Chain Analytics (3 Credits)

Introduces the design, analysis, management, and control of supply chains. Because of continuing advances in globalization, sustainability, and information technology, course emphasis will include integration of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Cross-listed with INTB 6730. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6740 - VBA for Business Analytics (3 Credits)

This course teaches the essentials of Visual Basic for Applications (VBA), the programming language for Microsoft Office. Focus is in using VBA as a tool to automate common tasks and to create business analytic applications. Goal is to hide the details of the analytical and modeling techniques by creating user interfaces for inputs and then presenting managerially relevant results. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6750 - Large-Scale Optimization Methods for Big Data (3 Credits)

Optimization methodologies comprise one of the major components of modern business analytics. In the era of big data where problem scale is enormous, the ability to model and solve large-scale problems is increasingly important. In the first part of this course we will learn how to model and solve large scale applications by using the AMPL modeling language and solvers such as CPLEX and Gurobi. The second half of the course will be devoted to working on projects. Prereq: BUSN 6630 with a grade of "C" or better. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: BUSN 6630 with a grade of "C" or better Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6760 - Data Visualization (3 Credits)

The course equips the Business Analyst with foundational concepts and techniques required for telling a compelling story with large complex data sets. The importance of visualizing information for many analysts is often overlooked or downgraded as a natural product of the analytics or model but if the visualization is ineffective the decision making processes and knowledge discovery will be compromised. This is a project-based course that begins with reviewing concepts of human perception and cognition and perceptual accuracy and preferences. In the weeks we have together we will explore the basics of graphic design and making a "good" graph, explore why some data visualizations present information effectively and others do not, and we will also consider visualization as a component of systems for the Data Scientist and Business Analyst and presents examples of EDA (exploratory data analysis), visualizing time, networks, and maps. We end by reviewing methods and tools for static and interactive graphics. Tableau or other cutting-edge software will be utilized. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6800 - Special Topics (3-12 Credits)

A number of different current topics in business analytics are discussed in this course. Consult the current schedule for semester offerings. Prereq: Permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max hours: 12 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6840 - Independent Study (1-6 Credits)

Instructor approval is required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 6 Credits. Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

BANA 6910 - Business Analytics Practicum (3 Credits)

Students apply business analytics methodologies to a real-life business problem in cooperation with a local organization. Under the supervision of faculty, students engage in problem definition, analysis and solution. Results are presented in oral and written form to the sponsoring organization. Because the practicum is a capstone course, it is not appropriate for students just beginning the program. Prereq: Will vary depending upon the particular topic (consult the schedule of classes). Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Business Law (BLAW)

BLAW 6500 - Legal Issues for CPA's (3 Credits)

Examines advanced legal issues affecting accounting financial reporting. Designed for graduate students who want to understand and improve the links between accounting disclosures and legal requirements. Note: This class is rarely offered. Prereq: BLAW 3000 or BUSN 6540 (or equivalent). Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BLAW 3000 or BUSN 6540 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

Candidate for Degree (CAND)

CAND 5940 - Candidate for Degree (0 Credits)

Max hours: 0 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CAND 6940 - Candidate for Degree (1 Credit)

Prereq: Consent of Instructor.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 3.

A-GRAD Restricted to graduate students only.

Additional Information: Report as Full Time.

Typically Offered: Fall, Spring, Summer.

Chemistry (CHEM)

CHEM 5010 - Advanced Inorganic Chemistry (3 Credits)

Covers the fundamental principles of inorganic chemistry. Topics include atomic structure and periodicity, molecular symmetry, bonding, structural chemistry, main-group chemistry, coordination chemistry, and organometallic chemistry. Requisite knowledge in Undergraduate Inorganic and Physical Chemistry assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4010. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5073 - RM-MSMSP Research Experience for Teachers - Chemistry Cohort (1-6 Credits)

The Research Experience for Teachers (RET) program will be a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max Hours: 6 Credits.

Grading Basis: Letter Grade

CHEM 5110 - Advanced Analytical Chemistry (3 Credits)

Explores the fundamental principles of analytical chemistry. Topics will focus on meteorology (the science of making measurements), measurements based on energy transfer (e.g. spectroscopic analysis), and measurements based on mass transfer (e.g. chemical separations and electrochemistry). Requisite knowledge in Undergraduate Instrumental Analysis is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4110. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5221 - Practical Applications of Spectroscopy (3 Credits)

This course surveys spectroscopic methods in order to deduce the structure of organic compounds from an examination of spectra, with an emphasis on infrared spectroscopy, mass spectrometry, nuclear magnetic resonance spectroscopy, and ultraviolet spectroscopy. Students will be introduced to a wide array of powerful and elegant tools for obtaining qualitative information about the structure of matter. This course will require a good amount of thought, yet all of the concepts and associated mathematical manipulations are within the reach of a student who has met the prerequisites. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4221. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5310 - Advanced Organic Chemistry (3 Credits)

An exploration of structure, bonding and reactivity in organic modules that includes extensive analysis of the chemical literature, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry and Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4310. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5421 - Cannabis Chemistry (3 Credits)

An exploration of the terpene to cannabinoid compounds including biosynthesis pathways; human receptor structures and mechanism; current analytical methods for Quality Assurance and Quality Control and current research in medical applications. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4421. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5510 - Computational Chemistry (3 Credits)

Classical and ab initio molecular dynamics are covered from theory to application. Students have access to high-performance computational resources and cover current topics in the field. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4510. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

Typically Offered: Fall.

CHEM 5530 - Advanced Physical Chemistry (3 Credits)

Explores fundamental properties of molecules (bond length and strength, the potential energy surface, reaction rates, etc.) and examines how these properties are measured, using original literature as the primary source, and culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5550 - Applications of Group Theory in Chemistry (3 Credits)

Introduces the basic principles of the group theoretical method as well as its applications in organic, inorganic, and physical chemistry. Covers Mo's for main-group and transition metal compounds, ligand field theory, molecular vibrations, and electron absorption spectroscopy. Requisite knowledge in Undergraduate Physical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5600 - Graduate Topics in Chemistry (1-3 Credits)

Graduate students in chemistry or a related discipline explore a special topic in chemistry or biochemistry. A description of topics to be covered in the current semester is maintained on the Chemistry department website. Restriction: Restricted to degree-granting Graduate programs. Term offered: spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to degree-granting graduate programs

CHEM 5610 - Understanding & Presenting Chemical Research (1-2 Credits)

This course will improve your ability to systematically search for chemical information, help you interpret the information you find, & improve your ability to summarize and present that information. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4610. Term offered: fall, spring. Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

CHEM 5630 - Programming for Data Analysis in the Physical Sciences (1 Credit)

This course will be taught using live coding format (the instructor will code live in the classroom with the students). In this course, you will learn to process data using python scripts that you will write. Data include for example absorption spectra, protein pdb files, coordinate files. You will also learn how to use Python libraries and write functions (for example to create high resolution graphs). Finally, you will learn best coding practices, how to keep track of different versions of your code and share your code using Github. Restriction: Restricted to students enrolled degree-granting graduate programs. Cross-listed with CHEM 4630. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5655 - Teaching Assistant Bootcamp (1 Credit)

This course is 4-5 8-hour days of intensive training in suitable pedagogy for general chemistry and organic chemistry laboratory classes, procedures for teaching laboratory sections, and laboratory techniques. Students must have a teaching assistant contract with the Chemistry Department in order to take this course. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4655. Term offered: fall. Repeatable. Repeatable. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to degree-granting graduate programs

CHEM 5700 - Environmental Chemistry (3 Credits)

A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil and air environments. Requisite knowledge in Undergraduate Organic and Analytical Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Cross-listed with CHEM 4700. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5810 - Graduate Biochemistry I (4 Credits)

Topics include proteins, mechanisms and kinetics of enzymes, carbohydrates, lipids and membranes, nucleic acids, genetic engineering, signaling pathways, and energetics, which are integrated with critical analysis of recent journal papers, culminating in written and seminar presentations of individual projects. Requisite knowledge in Undergraduate Organic Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5815 - Structural Biology of Neurodegenerative Diseases (3 Credits)

Advanced course in Biochemistry/Biophysics. Principles of Protein Folding, Structure-Function Relationship, and spectroscopic techniques related to characterization of these processes as applied to neurodegenerative diseases such as Parkinson's and Alzheimer's. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4815, BIOL 4815, and BIOL 5815. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5825 - Biochemistry of Metabolic Disease (3 Credits)

Advanced course in biochemistry. An expanded study of selected topics in metabolism and how they relate to diseases, including inflammation, diabetes, obesity, and rare genetic disorders. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4825, BIOL 4825, and BIOL 5825. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5830 - Graduate Biochemistry II (4 Credits)

Topics include biosynthesis & metabolism of carbohydrates, lipids & amino acids, & genetic information flow of DNA replication, transcription, translation & regulation of transcription, which are integrated with critical analysis of recent literature, culminating in written & seminar presentations of individual projects. Continuation of 5810. Prereq: CHEM 5810 with a B- or higher. Restriction: Restricted to degree-granting Graduate programs or permission of instructor. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 5810 with a B- or higher Restriction: Restricted to degree-granting Graduate programs

Typically Offered: Spring.

CHEM 5835 - Biochemistry of Gene Regulation and Cancer (3 Credits)

Explores the biochemical and molecular aspects of cancer biology. Topics include DNA mutations and repair, gene regulation, oncogenes and tumor suppressors, stem cells and differentiation, and cancer drug development. Restriction: Restricted to degree-granting graduate programs. Cross-listed with CHEM 4835, BIOL 4835, and BIOL 5835. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 5845 - Molecular Modeling and Drug Design (3 Credits)

Advanced course in biochemistry. An introductory course on modern molecular modeling techniques and their applications to computer-aided rational drug design. Restriction: Graduate standing. Cross-listed with CHEM 4845. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 5860 - Bioinorganic Chemistry: Bioinorganic compounds in medicine (3 Credits)

Explore the roles of metals in biochemistry and medicine by studying chemical/physical properties of metal coordinated compounds. The course focus on metal coordination resulting biopolymer folding and the function of macromolecules that is involved into iron cytochromes, zinc and copper enzymes, iron sulfur proteins, oxygen transport, iron storage, electron transfer, inorganic model compounds, metals in medicine, and toxicity of inorganic species. Topic is extended to biomedical application such as chemotherapy. Prereq: CHEM 3810 or CHEM 4810 or CHEM 5810 with a C- or higher. Cross-listed with CHEM 4860. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 3810 or 4810 or 5810 with a C- or higher

CHEM 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CHEM 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CHEM 6000 - Chemistry Seminar (1-3 Credits)

Faculty and student presentations of CU-Denver research projects and other current chemistry topics. Note: All chemistry students are encouraged to attend, but credit is given only to those who present seminars. Requisite knowledge in Undergraduate Physical or Environmental Chemistry is assumed. Restriction: Restricted to degree-granting Graduate programs. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6001 - Master's Research Seminar (1 Credit)

Students present a formal seminar to the department describing their master's research work. Note: Required for all students completing a thesis-based master's degree; optional for those completing master's projects. Prereq: CHEM 6000 with a B- or higher. Term offered: fall, spring, summer. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq: CHEM 6000 with a B- or higher

CHEM 6002 - Chemistry Seminar I (1 Credit)

The art of listening to and giving a chemistry seminar. Introduces the chemical literature, the pedagogical techniques of seminar giving, and the critical thinking skills required to understand a technical presentation. Note: Seminar presentations by faculty, outside speakers, and advanced graduate students are analyzed by the students participating in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6003 - Chemistry Seminar II (1 Credit)

Students prepare and give a chemical seminar based on a literature paper. Note: Seminar presentations by students and outside speakers are analyzed by students in the course. Restriction: Restricted to degree-granting Graduate programs. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

CHEM 6840 - Independent Study: CHEM (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CHEM 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CHEM 6960 - Master's Report (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

Chinese (CHIN)

CHIN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages.

Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

CHIN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods.

This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

CHIN 5690

Typically Offered: Spring.

CHIN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Civil Engineering (CVEN)

CVEN 5025 - Autocad Civil 3d & Advanced Civil Engineering Graphics (3 Credits)

Lectures target civil engineering industry specific site information modeling software and geospatial industry specific geographical information systems software to elevate students' knowledge of each software to an in-depth understanding. Laboratory exercises will focus on civil drafting and design, producing documentation, and general project workflows. Additional laboratory exercises will focus on geospatial data creation, data management, and cartographic display. Prereq: CVEN 1025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 1025

CVEN 5087 - Engineering Contracts (3 Credits)

Laws met by the practicing engineer, types of contracts, specification writing, laws on contracts, agency, partnership, sales and property, with primary emphasis on rights and duties of the engineer. Cross-listed with CVEN 4087. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5110 - Advanced Structural Classical Analysis (3 Credits)

Understanding classical hand-solved analysis techniques in civil and structural engineering. Methods to be studied include: Moment Area, Conjugate Beam, Virtual Work, Stiffness Method, Force Method, Slope Deflection, and Moment Distribution. Prerequisite: CVEN 3505 with B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: CVEN 3505 with B- or better or graduate standing.

CVEN 5111 - Structural Dynamics (3 Credits)

Vibration and dynamic response of simple linear and nonlinear structures to periodic and general disturbing forces. Frequency domain analysis, response analysis of multi-degree-of-freedom systems. Wind and earthquake effects. Prereq: CVEN 3505 with a B- or higher or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a B- or higher or graduate standing.

CVEN 5112 - Structural Design Loads (3 Credits)

The course will review the probabilistic approach for load determination used in modern building codes from theoretical and applied perspectives. The course is intended to study design dead loads, live loads, snow loads, earthquake loads, wind loads, construction loads, and load combinations for buildings. There will be off-campus events at times other than regular class hours. Other topics may be treated as time permits. Prereq: CVEN 3505 with a C- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a C- or higher

CVEN 5121 - Intermediate Mechanics of Materials (3 Credits)

Intermediate-level course in the mechanics of deformable bodies. Plane stress and strain; stress-strain relation with emphasis on elastic and inelastic behavior of members, and theories of failure. Discussion of basic methods of structural mechanics, with applications to asymmetric and curved beams, thick walled pressure vessels, torsion of members of noncircular section, and other selected problems in stress analysis.

Prereq: CVEN 3121 or MECH 3043 and MATH 3191 and 3200 or MATH 3195 with a C- or higher, or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

(CVEN 3121 or MECH 3043) AND ((MATH 3191 and MATH 3200) or MATH 3195) OR GRAD/NDGR

CVEN 5201 - Construction Dewatering (3 Credits)

Introduction to construction dewatering including removal of ground water and surface water in construction sites, characteristics of groundwater aquifers, groundwater flow, geotechnical investigation of dewatering problems and application of modern dewatering technology. Basic methods for controlling water on a construction project are presented incorporating open flow and pumping of excavations, soil pre-draining, water cutoff and exclusion. Prereq: Theoretical/applied fluid mechanics, Soil mechanics. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5333 - Surface Water Hydrology (3 Credits)

Fundamentals of hydrology emphasizing surface water processes. Topics include the hydrologic cycle, frequency analysis, drought management, flood routing, rainfall-runoff relationships (rational method, unit hydrograph, and hydrologic software) and hydrologic design. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5334 - Groundwater Hydrology (3 Credits)

Topics include groundwater occurrence, hydrologic cycle and budget, interactions with surface waters, principles of groundwater flow, well hydraulics, well field design, regional flow systems, water and pollutant chemistry, computer modeling and groundwater management. Emphasis is on quantitative analysis methods for groundwater resource inventory, design and management. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5335 - Vadose Zone Hydrology (3 Credits)

Engineering analysis of the vadose zone, the unsaturated porous media linking the earth surface to groundwater. Darcy's law for flow. Richards equation for moisture content. The advection-dispersion equation for solutes. Analytical solutions and numerical modeling applied to infiltration, evaporation, drainage, and subsurface remediation. Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: B- or better in CVEN 3313 or graduate standing or instructor permission.

CVEN 5336 - Urban Runoff Quality and Quantity Modeling (3 Credits)

This course covers rainfall/runoff data base, rain gage under-catch, statistical models for frequency analysis, Unit Graph and Kinematic Wave method for runoff prediction, urban watershed modeling, event-based flood prediction, continuous flow predictions, modeling consistency and sensitivity, impact assessments, master drainage planning, and storm centering technique. Prereq: CVEN 3323 with a C- or higher and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323 with a C- or higher and graduate standing

CVEN 5337 - Sustainable Hydraulic System Design (3 Credits)

This course applies the low-impact-development (LID) principles to design stormwater hydraulic structures in urban areas. The major topics in this course will cover storm water quality capture volume, filtering process for water quality control, and infiltration process for on-site stormwater disposal, including porous pavements, vegetation beds, bio swales, rain gardens, and landscaping detention. The computer model, EPA SWMM-LID, will be employed to guide the selection of design parameters and to evaluate the structural performance. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5343 - Open Channel Hydraulics (3 Credits)

Engineering analysis and design of natural and artificial open channels. Application of uniform flow concept to design of erodible and non-erodible channels. Application of energy and momentum principles to conditions of gradually varied flow, spatially varied flow and rapidly varied flow. Prereq: CVEN 3323 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323

CVEN 5344 - Unsteady Open Channel Hydraulics (3 Credits)

Derivation of basic principles of unsteady open channel flow. Application of kinematic wave, diffusive wave and dynamic wave approaches to open channel, including overland flow and flow in a drainage or river network. Introduction of numerical finite difference methods, characteristic method and simplified analytical method for the solution of unsteady open channel flow problems. Evaluation of computer simulation models such as DWOPER and SWMM. Prereq: CVEN 5343 and CVEN 5333 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5333 and CVEN 5343

CVEN 5345 - Computational Methods for Water Resources (3 Credits)

This course covers two major areas: hydrologic and hydraulic numerical routing schemes. The hydrologic routing includes linear and nonlinear reservoir operations using the characteristic curves derived from the reservoir geometry. The hydrologic routing numerical scheme will be applied to optimize the reservoir operations for power generation, irrigation, and flood control. The hydraulic routing covers Dynamic Flood Wave, Diffusive Wave, and Kinematic Wave. The finite difference method is used to develop numerical models to predict flood flows through channels. This course also covers probable maximum precipitation and dam break flow analysis. Prereq: CVEN 3323. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323

CVEN 5381 - Introduction to Geographic Information Systems (3 Credits)

Provides an overview exposure and experience with various aspects of GIS technology and its uses for natural resource and infrastructure, planning, design and management. This course involves a survey of GIS software and hardware, review of cartographic mapping principles, hands-on applications to environmental impact assessment, municipal facilities management, transportation, water resources and demographics. GIS project management factors are addressed. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5382 - Geospatial Data Development (3 Credits)

This second GIS course builds on the introductory course and addresses principles and technologies for development and conversion of spatial databases, including photogrammetry, surveying and geodesy, coordinate systems and transformations, and remote sensing. Prereq: CVEN 5381 with a B- or better OR graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 with a B- or better OR graduate standing.

CVEN 5383 - GIS Analysis – Theory and Practice (3 Credits)

This third course reviews GIS software functions and terminology, including data entry (input, editing), manipulation (projection, merge, window, aggregate), analysis (map algebra, overlay, Boolean, interpolation network, measurements, distance, terrain modeling, statistical analysis), query (spatial, attribute), and display/reporting. Integration of various domain-specific systems analysis models with GIS databases is also addressed. Laboratory activities involve programming applications using available GIS. Prereq: CVEN 5381. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5384 - GIS Project Management (3 Credits)

This course explains how to build a foundation for GIS project success and deliver results. Topics include data governance, administration of technical infrastructure, managing roles and skills, key leadership concepts, and project management methodologies like Agile/Scrum. Best practices and real world applications are discussed. Also addressed are issues of GIS institutional acceptance, the role of computerized spatial data systems in decision-making, application of planning techniques for accomplishing resource goals, and administrative structures that enhance efficiency of use. Prereq: CVEN 5381 with a B- or better or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 with a B- or better OR graduate standing.

CVEN 5385 - GIS Relational Database Systems (3 Credits)

Introduces relational database management system concepts with emphasis on GIS. Includes examination of relational database systems from conceptual design through relational schema design and physical implementation. Topics include SQL, database design and implementation for large database systems, transaction management, concurrency control, distributed database management systems and the interaction and progressive integration of GIS technologies and RDBMS technologies. Prereq or Coreq: CVEN 5381 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq or Coreq: CVEN 5381 or graduate standing.

CVEN 5386 - GIS Laboratory (3 Credits)

Provides in-depth experience with use and programming of a particular GIS software, including ArcGIS and related object-oriented programming languages. Advanced functionality for user authoring of software interface, data management and analysis functions and output generation. Exact content will vary by semester. Prereq: CVEN 5381.

Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Prereq: CVEN 5381

CVEN 5387 - Advanced Remote Sensing (3 Credits)

Addresses remote sensing concepts including 1) imaging sensors and geo-referencing; 2) image processing for radiometric, multi-spectral image enhancement, and multi-sensor image fusion; and 3) multi-spectral image classification, including feature extraction, supervised and unsupervised classification, and extensions to hyper-spectral data.

Prereq: CVEN 5382 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5382 with a B- or better OR graduate standing.

CVEN 5388 - Site Engineering (3 Credits)

Course introduces the fundamentals of site engineering which require understanding and interpreting landforms, slopes, contour lines, grading, drainage, and earthwork to storm water management, hydrology reports, designing roadways, and street networks. Other topics include designing for ADA and concepts of sustainability in site design. Note: CAD experience is recommended. Cross-listed with CVEN 4388. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 1025

CVEN 5389 - Open Source Desktop Mapping, Modeling & Data Processing (3 Credits)

This graduate-level course covers the open source tools and procedures that students can use for desktop GIS mapping, modelling, and data analysis and preparation that are unique in comparison to other GIS software used in the industry. Prereq: CVEN 5381 Intro to GIS or equivalent permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5390 - Interactive Web Mapping GIS (3 Credits)

This course introduces students to designing, creating, delivering, and using interactive web maps. Many people rely daily on web maps to direct us from point A to point B and more. After starting with a broad introductory background, this is a technical hands-on course in which students use several open source (FOSS) technologies. Prereq: CVEN 5381 Introduction to GIS or equivalent or permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381

CVEN 5391 - Introduction to Geomatics (3 Credits)

This course presents the concepts of Geomatics along with spatial data, tools, and their connection. This course covers spatial data collection methods, data assessment, and processing. The course also covers projections, methods of coordinate conversion and transformation, and data transfer across different spatial analysis platforms. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5392 - Unmanned Aerial Systems (3 Credits)

This course presents concepts and practical methods of using Unmanned Aerial Vehicles for engineering projects. The course covers mission planning, operations, field data collection and processing, and data analysis. Legal and ethical considerations are also covered, as well as the relative costs and benefits of using UAV. Prereq: CVEN 5391. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391

CVEN 5393 - Water Resources Development and Management (3 Credits)

A multidisciplinary exploration of the principles governing water resources planning and development. Emphasis is on the sciences of water (physical, engineering, chemical, biological and social) and their interrelationships. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5395 - GPS/GNSS (3 Credits)

This course presents the practical concepts and implications of using GPS/GNSS for engineering projects. The course covers a variety of techniques for field data collection, processing, and data analysis. The course emphasis is on changes that are occurring because of using GPS/GNSS in the field. Prereq: CVEN 5391. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391

CVEN 5396 - HDS/LiDAR Tools & Data Analyses (3 Credits)

High Definition Surveying (HDS) scanners are extremely reliable and accurate geospatial data collection devices for surveyors, GIS analysts, engineers, and planners. The goal of this unique course is to present the instrumentation and technological principals used in data collection, project phases, data processing and analyses. This course is designed to provide information and practical skills for students wanting to learn how to plan and execute terrestrial LIDAR data collection projects with HDS scanners and HDS data processing software. Prereq: CVEN 5381 and CVEN 5395 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5381 and CVEN 5395

CVEN 5397 - Unmanned Aerial Systems Data processing (3 Credits)

This course will provide information and practical skills for unmanned aerial systems data processing and analyses. The course focuses on sensor selection, ground control, data processing, and data analyses. Prereq: CVEN 5391 and CVEN 5392. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5391 and CVEN 5392

CVEN 5401 - Introduction to Environmental Engineering (3 Credits)

Introduces students to the broad field of environmental engineering. Topics include essential chemical, biological, and risk assessment concepts needed for addressing environmental problems. Major unit operations and processes used for treating wastewater and potable drinking water. An overview of technologies used for treating particulate and gaseous air pollutants, managing solid wastes, and remediating hazardous wastes. The course also introduces environmental sustainability, green engineering, life cycle assessment and other systems oriented concepts. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Prereq: CHEM 1130, CHEM 2031, or ENGR 1130, and Graduate standing or permission of instructor. Cross-listed with CVEN 3401. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5402 - Contaminant Fate and Transport (3 Credits)

Provides unified understanding of fundamental physical, chemical and biological processes that govern the transport and fate of pollutants in environmental systems - water, air and subsurface. The course focuses on multimedia modeling and model solution methods. The course also introduces exposure and risk assessment techniques.

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5403 - Environmental Regulations and Management Systems (3 Credits)

Students will receive an overview and understanding of major environmental laws and will be introduced to legal concepts used to develop environmental laws. In addition, students will learn about environmental management systems and their applications to environmental problems. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5404 - Water and Wastewater Treatment (3 Credits)

Water and wastewater treatment, including aqueous chemistry (equilibrium, reaction kinetics, redox reactions, and acid-base equilibria), physicochemical processes (sedimentation, filtration, adsorption, membrane separation), and biological processes (applied microbiology, reactor configuration, waste-to-energy technology). Prereq: CHEM 1130, CHEM 2031, ENGR 1130, graduate standing or instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CHEM 1130, CHEM 2031, or ENGR 1130 or Graduate standing or instructor permission.

CVEN 5405 - Environmental Life Cycle Assessment (3 Credits)

This course covers cradle-to-grave systems thinking and focuses on quantitative methods for environmental systems modeling, analysis and assessment. The primary method covered is life cycle assessment (LCA). The students will learn the various steps for conducting a process-based LCA including goal and scope definition, life cycle inventory (LCI), life cycle impact assessment (LCIA) and interpretation. For a broader life cycle perspective Economic Input-Output LCA (EIO-LCA) will be introduced. Emphasis will also be placed on framing the LCA analysis around attributional (technology/process) versus consequential (policy/decision) focus. Mathematical techniques for uncertainty & sensitivity analysis, such as Monte Carlo simulations will be covered. Students will be exposed to several LCA case studies. Prereq: Graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

CVEN 5406 - Engineering and Science Informatics (3 Credits)

Students will learn applied, basic statistics & probability concepts and provide experience in the correct use and interpretation of those techniques. The course is designed in such a way that any graduate or undergraduate level student wanting to learn data analysis will benefit. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CVEN 5407 - Complex Systems Methods (3 Credits)

This graduate course introduces nonlinear dynamics, information theory, and network analysis in an environmental engineering, earth sciences, and sustainability context. Techniques will be applied to analyze environmental and weather data in addition to other examples relevant to engineering and critical zone science. Restriction: Restricted to graduate standing or with instructor's permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

CVEN 5424 - Field Methods for Sustainable Development: Colombia (3 Credits)

Course will introduce students to international sustainable development in both lab and field work in Colombia, partnering with communities on sustainable development projects across cultures and disciplines both within and outside of engineering, and emphasizing community interaction. Travel fees are required. Note: Personal essay, letter of recommendation, and interview with instructor required. Cross-listed with CVEN 4424. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5426 - Pipe Network and Sewer Design (3 Credits)

Design of pressurized pipe networks for water supply and sanitary sewers for wastewater collection. Topics include the civil engineering design process, estimation of water and wastewater design loads, and design of pressurized pipe networks and sanitary sewers including pump selection, service reservoirs, lift stations, and relevant software. Design project and field trip required. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Cross-listed with CVEN 4426. Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor's permission.

CVEN 5427 - Storm Water System Design (3 Credits)

This course covers urban watershed analysis, design rainfall and hydrologic losses, flood frequency and design event, rational method for peak runoff prediction, street hydraulic capacity and safety, culvert hydraulics, street inlet collection system, and storm sewer system design and flow analysis. Includes graduate-level analysis, modeling, or reflection on the refereed literature. Prereq: CVEN 3323 with a C- or higher. Restriction: Restricted to students with graduate standing or with instructor's permission. Cross-listed with CVEN 4427. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3323. Restriction: Restricted to students with graduate standing or with instructor's permission.

CVEN 5434 - Sustainable Water Systems: Biological Processes (3 Credits)

A comprehensive course that covers the theory and application of biological processes used in water quality engineering, with an emphasis on state-of-the-art water pollution control and waste-to-energy technologies. The initial lectures will introduce material on microbial energetics, diversity, and kinetics. The remainder of the course will involve the application of fundamental principles to treatment and energy recovery processes, including bioreactor configurations and design considerations. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5460 - Introduction to Sustainable Urban Infrastructure (3 Credits)

This course takes a systems approach to urban infrastructures that deliver critical materials to cities; primarily water, energy, transportation, buildings, and food systems. The focus is on the current state of sustainable development, cities, and infrastructure systems, exploring sustainability strategies and measuring their effectiveness, and analyzing implementation and diffusion of sustainability strategies. Cross-listed with URPL 6399. Prereq: Graduate standing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CVEN 5461 - Defining and Measuring Sustainability (3 Credits)

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Field work applies both tools to cities in Colorado. Cross-listed with URPL 6548. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5464 - Sustainability and Climate Change (3 Credits)

This course explores environmental sustainability in the context of climate change, emphasizing feedbacks and interactions within the climate-ecosystem-water-energy-food system. Course topics include climate and ecosystem modeling, climate data analysis, and testing students' assumptions and inferences regarding various sustainability topics. Prereq: Graduate standing or instructor permission. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CVEN 5480 - Hazardous Wastes and Site Remediation (3 Credits)

Students learn to: (1) define and classify hazardous wastes encountered at hazardous waste-contaminated sites, (2) learn basic principles underlying currently available technologies for site remediation, (3) use EPA's technology screening matrix for technology selection, and (4) provide engineering design for selected remediation systems, e.g. ground-water-pump-and-treat, soil vapor extraction, soil washing, and bioremediation. Prereq: CVEN 5402. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5402

CVEN 5481 - Sustainable Water Systems Policy and Planning (3 Credits)

To provide students with a working knowledge of sustainable urban water systems which are resilient, resource efficient and environment friendly. Students will learn about the various components of urban water and wastewater systems, including water resource management, treatment, transport and reuse, and how to evaluate, develop and design the various components in a sustainable manner. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5494 - Risk Assessment in Environmental Engineering (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Prereq: Graduate standing or permission of instructor. Cross-listed with ENVS 6200, HBSC 7340. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5514 - Matrix Analysis of Structures (3 Credits)

Matrix analysis of skeletal structures. Systematic formulation of stiffness and flexibility methods of analysis of skeletal structures. Application of modern computational tools to structural analysis, including introduction to the finite element method. Prereq: CVEN 3505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3505 with a C- or higher

CVEN 5515 - Introduction to Finite Element Analysis (3 Credits)

Systematic formulation and application of the finite element approximation to the solution of engineering problems. Topics include one- and two-dimensional elasticity problems, two-dimensional heat flow and irrotational fluid flow. Elements considered include triangular and quadrilateral elements formulated by elementary and isoparametric techniques. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5540 - Masonry Design (3 Credits)

The course will review the probabilistic approach for load determination used in modern building codes from theoretical and applied perspectives. The course is intended to study design dead loads, live loads, snow loads, earthquake loads, wind loads, construction loads, and load combinations for buildings. There will be off-campus events at times other than regular class hours. Other topics may be treated as time permits. Prereq or Coreq: CVEN 4585 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq/Coreq: CVEN 4585 or graduate standing.

CVEN 5550 - Highway Bridge Design (3 Credits)

Design of highway bridges in accordance with the ASSHTO LRFD Bridge Design Specification. Topic coverage includes bridge planning, construction materials in bridges, bridge systems, design loads, structural modeling and analysis, design of concrete deck system, and design of concrete and steel superstructures. Prereq: CVEN 4575 and CVEN 4585 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4575 and CVEN 4585 with a C- or better or graduate standing.

CVEN 5565 - Advanced Timber Structure Design (3 Credits)

Design of wood framing systems including beams, columns, trusses, and diaphragms. Wood as a material, framing terminology, connection design, structural composite lumber, glued-laminated members, and plywood are covered. The course will emphasize on preparing students for a career in structural engineering. Prereq: Graduate Standing or (CVEN 3505 and 3141 with a C- or higher and Civil Engineering major). Cross-listed with CVEN 4565. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: Graduate Standing or (CVEN 3505 and 3141 with a C- or higher and Civil Engineering Majors.)

CVEN 5575 - Advanced Topics in Structural Steel Design (3 Credits)

Plate buckling, plate girder design and other topics determined by class interest. Prereq: CVEN 4575 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4575 with a C- or better or graduate standing.

CVEN 5580 - Design of prestressed concrete structures (3 Credits)

To learn the basic concepts of analysis and design of prestressed concrete, which is essentially reinforced concrete in which steel reinforcement is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Prereq: CVEN 4585. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585

CVEN 5585 - Advanced Topics in Reinforced Concrete (3 Credits)

Advanced topics relating to design and analysis of reinforced concrete structures. Prereq: CVEN 4585. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585

CVEN 5590 - Design of Prestressed Concrete (3 Credits)

To learn the basic concepts of analysis and design of prestressed concrete, which is reinforced concrete in which steel is tensioned against the concrete, thereby introducing compression in concrete and hence overcoming the tensile weakness of concrete relative to its compressive strength. Cross-listed with CVEN 4590. Prereq: CVEN 4585 with a C- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585 with a C- or better or graduate standing.

CVEN 5591 - Design of Composite Structures (3 Credits)

The objective of this course is to provide engineering students with an overall awareness of the application and design of composite structures. Practical examples are discussed based on theory. Prereq: CVEN 4585 with a C- or better or graduate standing. Cross-listed with CVEN 4591. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 4585 with a C- or better or graduate standing.

CVEN 5602 - Advanced Street & Highway Design (3 Credits)

This course delves into the art and science of designing sustainable and context sensitive street and highway facilities. Topics include road classification, transportation planning, road alignments, cross-section design, bicycle and pedestrian facilities, intersections, and street network design. Cross-listed with CVEN 4602. Prereq: Permission of Instructor Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5611 - Transportation Engineering Statistics (3 Credits)

Covers statistical analysis methods for engineering studies in general, and for highway accident and traffic flow data in particular. Topics include data needs, sampling designs, survey methods, hypothesis testing, tests of proportions, non-parametric tests, analysis of variance, multivariate regression, and other tests of fit. Introductory overview of state and federal accident databases. Comparisons of accident rates by highway type, vehicle speeds, vehicle types, weather conditions and other factors also presented. Restriction: Graduate standing majors in the College of Engineering, Design and Computing or instructor permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

CVEN 5612 - Traffic Impact Assessment (3 Credits)

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5613 - Traffic Simulation Modeling (3 Credits)

This graduate-level course introduces students to the principles, methods, and software needed to perform traffic simulations of alternative transportation modes in urban areas. Students will develop a case study simulation of their choosing. Pre-req: CVEN 5621 Highway Capacity Analysis or equivalent permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5621

CVEN 5621 - Highway Capacity Analysis (3 Credits)

Covers the principles and applications of highway capacity analysis for freeways and arterials, ramps and interchanges, weave and merge sections, signalized and unsignalized intersections, roundabouts, pedestrian areas and transit. Emphasis is on level-of-service analysis procedures in the Highway Capacity Manual, although other approaches are also discussed. Additional topics include roadway characteristics, vehicle dynamics, human factors, speed and volume studies, travel time surveys and traffic flow characteristics. Prereq: CVEN 3602 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 with a B- or better or graduate standing.

CVEN 5622 - Traffic Operations and Control (3 Credits)

Covers principles of traffic flow and analysis methods for surface street traffic systems. Emphasis is on network modeling and simulation of coordinated signal systems, together with unsignalized intersections and freeway junctions using modern software tools. Additional topics include alternative signal timing plans, signal controllers, vehicle detection systems for volume, speed, occupancy and ramp metering. A course project requires students to develop and apply modeling software to a case study area. Prereq: CVEN 5621 with a B- or better or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5621 with a B- or better or graduate standing.

CVEN 5631 - Transport Modeling & Big Data (3 Credits)

This graduate-level course introduces students to travel demand modeling as developed over the last 60 years. It covers the fundamentals of conventional models and data needs but also delves into newer "big" data sources and methods that will allow us to observe and analyze transportation in completely new ways. Restriction: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5632 - Urban Transportation Modeling (3 Credits)

An advanced coverage of urban and regional transportation planning models, procedures and software. Mathematical formulations, properties, and solution algorithms are presented. Additional topics include methods of data acquisition from public domain databases for use in modeling software. A course project requires students to develop an application of modeling software to a case study area. Prereq: CVEN 5631 or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5631

CVEN 5633 - Sustainable Transportation Systems (3 Credits)

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Restriction: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5641 - Transit System Design (3 Credits)

This course introduces students to the components of transit system planning and design including station design and accessibility. The course focuses primarily on light rail design, but provides an overview of different transit modes. The instructors of this course have hands-on experience in transit planning, design, and construction. Prereq: graduate standing or permission of instructor.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

CVEN 5642 - Transit Construction (3 Credits)

This course introduces students to the fundamentals of transit construction necessary for successful project completion. It also covers how many different types of transit projects are managed and sustained. The instructors of this course have hands-on experience in transit construction, scheduling, and project control. Prereq: graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

CVEN 5652 - Airport Planning and Design (3 Credits)

National airport system plan, air travel demand, geometric design of airport facilities, design of airport pavement and drainage structures, and airport environmental impact. Prereq: CVEN 3602 and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3602 and Graduate Standing

CVEN 5662 - Transportation System Safety (3 Credits)

This is a graduate-level course on road safety that will: investigate contemporary safety analysis techniques; highlight the disconnect between the current safety paradigm and actual safety outcomes; cover drive, bicyclist and pedestrian safety concerns; and discuss notable efforts such as Vision Zero. Restriction: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

CVEN 5682 - Pavement Design (3 Credits)

This course addresses both the structural analysis and design methods for pavements. Emphasis will be on mechanistic analysis. It covers very broad areas of properties of pavement materials such as concrete and hot-mix asphalt, base course, and subgrade; traffic loads, the design and performance of flexible pavements and rigid pavements; and drainage. Computer codes included in the textbook package will be used in the course, mainly because of its availability without additional cost. Other topics may be treated as time permits. Prereq: CVEN 3141, 3505, and 3708/3718 with a C- or higher, OR graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3141, CVEN 3505, and CVEN 3718 with a C- or higher OR Graduate standing.

CVEN 5708 - Advanced Soils Engineering (3 Credits)

A unified treatment of the foundation of soil engineering analysis. Topics include stress-strain-strength of soils; generalized limiting equilibrium analysis; stability analyses of earth-retaining structures, slopes, and shallow foundations; probabilistic approach of stability assessment; computation of settlement of foundations in sand and clay and time-rate of consolidation and critical state concept. Special attention is directed toward the illustration of theory through practical examples. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5709 - Settlement Analysis (3 Credits)

A unified treatment of settlement analysis on sand and clay. Topics include settlement of shallow foundation, settlement of deep foundation, and settlement of embankments, walls and excavations. Conventional methods of analysis and the finite element method of analysis are covered. Critical design implications are emphasized. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5718 - Engineering Properties of Soils (3 Credits)

Engineering properties of soils, including index properties, permeability, stress-strain behaviors, shear strength, compressibility, critical state soil models and their application in interpreting soil behaviors. Attention also is directed to laboratory and in situ tests to examine the validity of shear strength and compressibility theories and their application to stability and settlement analysis. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5719 - Design and Construction of Geosynthetic-Reinforced Soil Structures (3 Credits)

Theory of reinforced soil; mechanical and hydraulic properties of geosynthetics; soil-geosynthetic interaction behavior; design concepts of GRS structures; design and construction of GRS retaining walls; design and construction of GRS embankments and slopes; design and construction of GRS foundations. Prereq: CVEN 5708. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5708

CVEN 5738 - Foundation Engineering (3 Credits)

Methods of subsurface exploration and sampling of soils, lateral support in open cuts, control of groundwater, analysis and design of shallow foundations, analysis and design of deep foundations, bridge abutments and cofferdams, underpinning, and application of modern computational techniques to analysis and design of foundations. Cross-listed with CVEN 4738. Prereq: CVEN 3141 and 3718 with a C- or higher. Restriction: Restricted to Civil or Construction Engineering majors or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3141 and 3718 with a C- or higher. Restriction: Restricted to Civil or Construction Engineering majors. OR Graduate standing.

CVEN 5758 - Foundations on Expansive Soils (3 Credits)

Expansive soils swell upon wetting because of the swelling nature of constituent clay minerals, particularly montmorillonite. This course studies swelling nature of different clay minerals, effects of wetting, swelling potential, swelling pressures, and design of different foundation systems. Prereq: CVEN 4738, B.S.C.E. or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5768 - Introduction to Rock Engineering (3 Credits)

Nature of rock masses, geological exploration, deformability and strength, in situ stresses and deformation, rock hydraulics. Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3708 or 3718, and CVEN 4718 or 4728, or Graduate Standing.

CVEN 5780 - Engineering Geology (3 Credits)

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Prereq: MATH 2411 and CVEN 2121. Cross-listed with CVEN 4780 and GEOL 4780/5780. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 2121 and MATH 2411

CVEN 5798 - Dynamics of Soils and Foundations (3 Credits)

Principles of vibrations of, and wave propagation in, elastic, homogeneous, isotropic media; laboratory and in situ measurements of soil properties; applications of these principles and properties to the design of foundations subject to dynamic loading generated by machinery, earthquakes, or blasts. Prereq: CVEN 5708, 5718, and graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5708, 5718, and Graduate Standing

CVEN 5800 - Special Topics (3 Credits)

Topical courses offered once or on irregular intervals. Typical topics include: computer-aided structural engineering, pre-stressed concrete, non-matrix structural analysis, geotechnical aspects of hazardous waste management, geographic information systems and facility management, groundwater hydrology, engineering project management, structural planning, engineering practice, spreadsheet application, field instrumentation, hazardous wastes engineering, bridge super and substructure design, advanced steel design, hydraulic transients, foundations – expansive soils, sludge process design. Prereq: Variable. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

CVEN 5840 - Independent Study (1-6 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 5939 - Internship (1-3 Credits)

Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 5950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

CVEN 5960 - Master's Report (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

CVEN 6111 - Dynamics of Structures (3 Credits)

Linear and nonlinear dynamic matrix analysis of multi-degree-of-freedom structural systems. Analysis and design for wind and earthquake loads including modal analysis and sub structuring techniques. Computer programming. Prereq: CVEN 5111. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5111

CVEN 6131 - Theory of Elasticity (3 Credits)

Mathematical theory of elasticity and its applications to engineering problems. Discussion of the basic analytical and numerical methods of solutions. Prereq: CVEN 5121. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5121

CVEN 6165 - Buckling in Structures (3 Credits)

Buckling of columns, beams, frames, plates, and shells in the elastic and plastic range. Post-buckling strength of plates. Beam-columns. Analysis by exact and approximate methods with special emphasis on practical implications and application of solutions. Prereq: CVEN 3121. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 3121

CVEN 6336 - Urban Flood Control System Design (3 Credits)

This course covers urbanization impact on watershed regime, flood control measures, detention and retention system, infiltration basin, sand filter, water quality control basin, wetland preservation, storm water Best Management Practices, low impact development, outlet structure design, pond safety, stream restoration, overflow risk analysis and optimal operation. Prereq: CVEN 5333, 5343 and graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CVEN 5333, 5343, and Graduate Standing

CVEN 6738 - Finite Element Method in Geotechnical Engineering (3 Credits)

Topics covered include: review of finite element methods, advantages and limitation of FEM for analysis of geotechnical engineering problems, one- and two-dimensional seepage analysis, consolidation analysis, incremental and iterative procedures in nonlinear analysis, no-tension analysis, simulation of construction sequence, simulation of soil behavior, simulation of interface behavior, and load-displacement analysis of earth structures. Prereq: CVEN 5708 and 5515 or consent of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CVEN 6840 - Independent Study (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7800 - Special Topics (1-6 Credits)

Credit and subject matter to be arranged. Prereq: Variable. Repeatable.

Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7840 - Independent Study (1-3 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CVEN 7990 - Doctoral Dissertation (1-10 Credits)

Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

CVEN 8990 - Doctoral Dissertation (1-15 Credits)

Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Additional Information: Report as Full Time.

Commodities (CMDT)

CMDT 6490 - Commodity and Equity Trading (3 Credits)

This is a co-listed class with the J.P. Morgan Center for Commodities and the Finance Department. This course focuses on how securities and futures contracts are designed and traded including trading exchange operations, regulation, trading mechanisms and processes. Students will learn the theory and practice of securities and futures contract trading with a focus on hands-on trading experience using industry software (CQG and Bloomberg) as well use of data sources (Morningstar). In this course, we will review the origins of liquidity, volatility, price efficiency, and trading profits. Next we will cover a host of topics concerning equity and commodity trade execution strategies, such as why and how investors trade, what and when investors profit from investing and speculating, the key principles of high-frequency trading and investor's overconfidence, why market institutions are organized as they are, and the role of public policy in the markets. Cross-listed with CMDT 4490, FNCE 4490 and FNCE 6490. Max hours: 3 Credits.

Grading Basis: Letter Grade

CMDT 6582 - Commodity Supply Chain Management (3 Credits)

This course introduces the design, analysis, management, and control of supply chains as applied to commodities. The course covers integration of processes and systems, relationship management of upstream and downstream supply chain players, and commodity-specific supply chain strategies. Cross-listed with CMDT 4582. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School.

CMDT 6682 - Commodity Valuation and Investment (3 Credits)

This course is a practical introduction to commodity markets. Students will learn how commodities are managed in the global markets from a hedgers, speculators and arbitrageurs point of view. Understanding the relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to futures and options markets analysis deploying strategies professional traders use in diverse market conditions. Students will work with the various trading software throughout the course and gain proficiency in real-world trading. Note: Students cannot receive credit for both CMDT 6482 or FNCE 6482. Cross-listed with CMDT 4682. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBC within the Business School.

CMDT 6782 - Commodity Data Analysis (3 Credits)

This course is an applied introduction to commodity data analysis. Students will learn how to analyze commodity prices using quantitative techniques. Relationships between commodities and the global economy will be investigated. In addition, commodities will be looked at as an asset class and cross-asset relationships will be studied. Students will be introduced to forecasting techniques and be able to develop and evaluate various forecasting models. Students will work with the open source R software environment throughout the course and gain proficiency. Cross-listed with CMDT 4782. Max hours: 3 Credits.

Grading Basis: Letter Grade

CMDT 6802 - Foundations of Commodities (3 Credits)

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with CMDT 4802 and FNCE 4802/6802. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

CMDT 6840 - Commodity Independent Study (1-3 Credits)

Independent study in the field of commodities. Topic of study varies according to project. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Communication (COMM)

COMM 5000 - Communication and Sport (3 Credits)

Examines the language and imagery used in sporting discourse. Considers how sports reflect and refract culture, both positively and negatively. Cross-list COMM 4000. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5021 - Perspectives on Rhetoric (3 Credits)

Introduces major theories of rhetoric from classical through contemporary times, including the theories of Aristotle, Cicero, I. A. Richards, Kenneth Burke, Michel Foucault and Jurgen Habermas. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4021. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5040 - Communication, Prisons, and Social Justice (3 Credits)

Examines the U.S. prison-industrial complex and enables students to envision ways of reducing crime and improving democracy by engaging in community service. Note: This course fulfills the communication department's exit class requirement. Cross-listed with COMM 4040. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. COMM 2020 is recommended preparation for this course. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5051 - Advanced Strategic Communication (3 Credits)

Provides senior-level training in hands-on communication environments where targeted messaging seeks specific outcomes. All students complete projects for community group, media outlet or corporation they choose. Students will not receive credit for this class if they have already received credit for COMM 5640. Cross-listed with COMM 4051. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5152 - Religion & Communication (3 Credits)

This course focuses on the relational/coconstitutive dynamics between religion, culture, and communication and how that shapes the world in which people live; how the legacy of political religious conflict, in conjunction with international culture wars, instigate socio-cultural conflict and change; and how an in-depth study of the dynamics of religion, culture, and communication can improve intergroup/intercultural/international relations or even negotiation/conflict resolution processes. Students will develop capacity to critically analyze the socio-cultural and political implication of religious ideology (radical and moderate), ways in which these ideologies are performed and communicated, and their (students') agency/ability to contribute to intercultural/international understanding, conflict resolution, civic engagement, and/or social justice efforts. In addition, upon completion, students should be prepared to engage in complex conversations about the idea of religion, its role and relevance in human lives, and recognize several commonalities and differences between their (students') and non-Western/other societies' worldviews, cultures, and communicative dynamics. We will engage these topics through multiple and diverse readings, examples from television, film, and social media, reflexive writing assignments, research and analytical activities, critical discussions, and experiential learning activities. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with COMM 4152, INTS 4152, RLST 4152, INTS 5152, and RLST 5152. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5221 - Research Methods: Qualitative (3 Credits)

Applies qualitative research methods to human communication practices, including the processes of designing qualitative studies, collecting data, analyzing and interpreting data, and reporting results. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4221. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5240 - Organizational Communication (3 Credits)

Addresses the relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Stresses functional workplace skills and practices. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4240. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5255 - Negotiations and Bargaining (3 Credits)

Designed to allow students to study theories and apply concepts that explain the influences of various forms of mediating, reducing, and/or resolving conflict among individuals, groups, organizations, nations and cultures. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4255. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5260 - Communication and Conflict (3 Credits)

Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4260. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5265 - Gender and Communication (3 Credits)

Examines gender as it is constructed, performed, evaluated, and negotiated through communication. Topics covered include the nature of gender, the gender binary, scientific research on gender, gender stories in popular culture, the process of crafting and performing gender stories, and responses to gender performances. Cross-listed with COMM 4265.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Undergraduates with senior standing may enroll with permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5270 - Intercultural Communication (3 Credits)

Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Term offered: fall, spring, summer. Cross-listed with COMM 4270 and INTB 6270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5282 - Environmental Communication (3 Credits)

Studies the communication processes involved in policies and practices affecting natural and human environments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4282. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5430 - Communication, China, & the US (3 Credits)

This course provides a senior-level opportunity to study how China & the USA have spoken about and to each other, from the Opium War through the Cyber Wars, thus situating this nation in a world of globalizing communication. Note: this course fulfills the communication department's exit class requirement. This course may count for the International Studies major or minor. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4430. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5500 - Health Communication (3 Credits)

Examines the role of communication in a wide range of health contexts. Topics include cultural constructions of health and illness, public health communication campaigns, client-provider interactions, telemedicine, community-based health programs and medical journalism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4500. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5550 - Rhetorics of Medicine & Health (3 Credits)

This senior seminar/bridge class investigates persuasion in contemporary medicine/health care from clinical settings through mass media. Case studies explore contagion, health policy, the body, death, and biopower. The course requires extensive discussion of readings and an original research project. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with COMM 4550. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5558 - Digital Health Narratives (3 Credits)

This course blends readings, discussions and activities about health narratives with digital media production skills to teach students how to create compelling digital stories about health-related topics. Cross-listed with COMM 4558. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5575 - Designing Health Messages (3 Credits)

Examines the roles of communication in the design and impact of health messages/campaigns. We will design and assess health communication messages/campaigns in a participatory, process-oriented way using varied communication tools. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with COMM 4575. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5601 - You Are What You Eat: Food as Communication (3 Credits)

Because food provides a communication channel for much of who we are as individuals, as a community and as a society this course analyzes food as a form of communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Cross-listed with COMM 4601. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5620 - Health Risk Communication (3 Credits)

Acquaints students with contemporary theory, research, and practice in health risk communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4620, ENVS 5620, and PBHL 4620. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5621 - Visual Communication (3 Credits)

Explores the social, cultural, and behavioral effects of visual images in a variety of contexts, including graffiti, film, advertising, art and architecture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4621. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5660 - Queer Media Studies (3 Credits)

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, WGST 4660, WGST 5660. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5665 - Principles of Advertising (3 Credits)

Provides a fundamental understanding and appreciation of advertising in today's global society, including consumer motivation, buying behavior, research, creative development and media planning. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with COMM 4665. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5682 - Political Communication (3 Credits)

Examines the communication processes involved in mediated political events. Topics include the stages of the campaign process, media coverage of the political campaign process, and literacy skills needed to understand political advertising. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4682. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5720 - Dynamics of Global Communication (3 Credits)

Explores the word "global" in a communication context by analyzing the relationships between world media, international events, economics and the geopolitics of culture. This analysis is supported by the application of mass, human and cultural communication theory. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list COMM 4720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5760 - New Media and Society (3 Credits)

This course examines the relationship between new media (such as the internet and mobile phones) and society. Students will investigate the social and cultural aspects of communication technologies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4760. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

COMM 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COMM 5939 - Internship (1-6 Credits)

Applies communication or technical communication concepts and skills in supervised employment situations. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: fall, spring, summer. Max hours: 15 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6013 - Introduction to Graduate Work in Communication (3 Credits)

Designed to familiarize students with the philosophical, ideological, and methodological bases of study in communication. Note: Required of all graduate students in M.A. program in communication. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6200 - Communication and Critical Theory (3 Credits)

This course offers students an introduction to the intellectual history and current status of the relationship between communication and critical theory; canonical thinkers (Marx, Freud, Adorno, etc.) are coupled with contemporary communication scholars who work on questions of social justice. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6400 - Communication, Globalization and Social Justice (3 Credits)

This course offers students an introduction to the intersections of communication as a discipline, globalization as a world process, and social justice as a contested, ever-evolving goal of activists. Note: This course may count for the International Studies major or minor. See your INTS advisor for more information. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6700 - Thesis and Project Practicum (3 Credits)

Focuses on strategies of research design and writing for undergraduate students working on theses for Latin honors and for master's students seeking to complete a major research paper or thesis. Cross-listed with COMM 4700. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll with Permission of instructor. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6710 - Topics in Communication (1-3 Credits)

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with COMM 4710. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6711 - Topics in Communication (1-15 Credits)

Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

COMM 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

COMM 6960 - Master's Project (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Computer Science (CSCI)

CSCI 5010 - Software Architecture (3 Credits)

This course will focus on two major areas. The first part of the course will cover Software Requirements Analysis and Development as well as Software Architecture and the Soft Skills needed by high level Software Architects. The second part of the course will cover how Persistent Data fits into different types of Software Systems. The primary focus of the second part of the course will be on incorporating larger scale Enterprise Data Systems into Software Systems and will be an application of the first part of the course material. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5011 - Software Project Management Support (3 Credits)

Large Software Systems must be Planned, Scheduled, and Staffed. To accomplish these tasks Software Engineers must understand the Software Architecture, the Software System Dependencies, Effort Estimation and the various Project Development Models that might be used. This course will look at different Project Models, Project Management Needs, and various Effort Estimation tools and techniques. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5098 - Computer Science for Bioscientists (3 Credits)

Provides a broad but detailed overview of the computer science field to graduate students in the biosciences, with emphasis on web technologies, programming languages, algorithms and database systems. No credit for CS graduate students. Prereq: Working knowledge of programming language (e.g., Java). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 5110 - Applied Number Theory (3 Credits)

Every year, Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, special diophantine equations, cryptography, computer security, and engineering applications. Cross-listed with CSCI 4110. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5172 - Complexity and Problem Solving (3 Credits)

Theoretical and practical aspects of solving complex problems, in particular, but not limited to, NP-complete and PSPACE-complete problems. Various heuristic and approximation algorithms, including greedy, ant, and Genetic Algorithms will be studied. This course is by instructor's permission only. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5211 - Mobile Computing and Programming (3 Credits)

This course contains two main simultaneous tracks, namely mobile computing and mobile programming. A series of lectures on various aspects of mobile computing provides an understanding of challenges and solutions in design and implementing mobile systems. The main topics include mobile sensing, human mobility and its technical implication. Students are expected to have undergraduate knowledge of operating systems and computer networks. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5217 - Information Theory (3 Credits)

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5220 - Social Networks & Informatics (3 Credits)

The main topics covered by the course will include 1) social network data structures, 2) basic random graph models and graph algorithms; 3) recommendation systems and predictive models 4) query suggestion and content analysis 5) link analysis and community detection 6) the spread of information, disease, and influence on networks. This course builds a solid foundation in social informatics technology. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5255 - Object Oriented Design (3 Credits)

Software system design using object-oriented techniques, responsibility driven design and agile development practices. Topics include objects, classes, interfaces, inheritance, polymorphism, exception handling and testing. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5407 - Security & Cryptography (3 Credits)

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGamal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 7407. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5408 - Applied Graph Theory (3 Credits)

Introduces discrete structures applications of graph theory to computer science, engineering and operations research. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits. Matching and covering problems, shortest route and network flows.

Restriction: Restricted to students with graduate standing. Note: Expected knowledge of abstract mathematics including discrete structures. Cross-listed with MATH 4408. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5409 - Graph Theory and Graph Algorithms (3 Credits)

Studies geometric graphs and other geometric objects, both analysis and algorithmic construction, leads to interesting connections among VLSI design, graph theory and graph algorithms. Studies a subset of the recent literature, with special emphasis on visibility graphs, thickness of graphs, graph coloring and the surprising and elegant connections among them all. Other topics are introduced as time permits. Prereq: CSCI 5408. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 5408. Restriction: Restricted to student with graduate standing.

CSCI 5411 - Computational Geometry (3 Credits)

Many practical and aesthetic algorithmic problems have their roots in geometry. Applications abound in the areas of computer graphics, robotics, computer-aided design, and geographic information systems, for example. A selection of topics from convex hull, art gallery problems, ray tracing, point location, motion planning, segment intersection, Voronoi diagrams, visibility and algorithmic folding will be covered. Cross-listed with CSCI 4411. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5446 - Theory of Automata (3 Credits)

Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Cross-listed with MATH 5446. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5451 - Algorithms (3 Credits)

Advanced design and analysis techniques: dynamic programming, greedy algorithms, amortized analysis. Advanced data structures: Fibonacci heaps, union-find data structures. Study of variety of special topics, which may include: graph algorithms, optimization problems, Fast Fourier Transform, string matching, geometric algorithms, NP-completeness and approximation algorithms. Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5455 - Data Mining (3 Credits)

Introduces concepts, techniques and methodologies to discover patterns in data. Topics include (but are not limited to) data preprocessing and cleansing, data warehousing, pattern mining, classification, prediction, cluster analysis, outlier detection, and online data analytics. Restriction: Graduate Standing. Cross-listed with CSCI 4455. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5542 - Neural Networks (3 Credits)

Parallel distributed representations, dynamics of Hopfield-style networks, content addressable memories, and Hebbian learning are the major topics of the first half. The last half consists of simulated annealing back propagation, competitive learning, and self-organizing networks. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 7551. Max hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 7552. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5559 - Database Systems (3 Credits)

Introduces database system concepts, with examination of relational database systems from conceptual design through relational schema design and physical implementation. Topics include database design and implementation for large database systems, transaction management, concurrency control, object-oriented and distributed database management systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5565 - Introduction to Computer Graphics (3 Credits)

Introduces two and three dimensional computer graphics. Topics include scan conversion, geometric primitives, transformation, viewing, basic rendering, and illumination. Emphasis is on the programming using C and C++ Open GL. Cross-listed with CSCI 4565. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5570 - Virtual and Augmented Reality (3 Credits)

This course covers the fundamental concepts and technologies of virtual and augmented reality, and it introduces recent advances in the field. Topics include 3D user interaction, immersive environments, tele-presence, mobile AR, human perception, and VR/AR applications. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4570. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5573 - Operating Systems (3 Credits)

Students study the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system. Topics include I/O devices, Disk Scheduling, File System Organizations, Directory Systems, Sequential and Concurrent process, CPU Scheduling, Memory Management, Deadlock, Process and Threading, and review of some related articles in the literature. Prereq: Expected knowledge of operating systems equivalent to CSCI 3453. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 7574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5575 - Cyber-Physical Systems (3 Credits)

Cyber-physical systems (CPS) bridge the cyber-world of computing, communication and control with the physical world. This course offers an interdisciplinary perspective of CPS within computer science and its applications to understand the issues in the full lifecycle of CPS. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5580 - Data Science (3 Credits)

Introduces concepts and techniques that enable data cycle from data extraction to knowledge discovery, including but not limited to data exploration, hypotheses testing, data organization, data featurization, supervised and unsupervised data modeling and learning, scaling-up analytics, and data visualization. Restriction: Graduate Standing. Cross-listed with CSCI 4580. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making.

Emphasis on various types of knowledge representation. Restriction:

Restricted to students with graduate standing. Cross-listed with CSCI 7582. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5585 - Advanced Computer Graphics (3 Credits)

An in-depth study of active research topics in computer graphics. Topics include advanced rendering, global illumination, scientific visualization, geometric modeling, simulation and animation. Emphasis is on readings from literature and on a term project. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5593 - Advanced Computer Architecture (3 Credits)

Important concepts in the structural design of computer systems are covered. Topics include memory hierarchy, super pipelining and super scalar techniques, dynamic execution, vector computers and multiprocessors. Expected knowledge of Computer Architecture equivalent to CSCI 4591. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5595 - Computer Animation (3 Credits)

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5610 - Computational Biology (3 Credits)

Designed to introduce a broad range of computational problems in molecular biology. Solution techniques draw from several branches of mathematics: combinatorics, probability, optimization, and dynamical systems. No prior knowledge of biology is critical, but it would be at least helpful to have the equivalent of BIOL 5099. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to students with graduate standing.

CSCI 5619 - Complex Intelligent Systems (3 Credits)

Presents the cutting-edge results of research in AI: advanced topics in linguistic geometry. LG is an approach to construction of mathematical models for reasoning about large-scale multi-agent concurrent games. The purpose of LG is to provide strategies to guide the participants of a game to reach their goals. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5630 - Linguistic Geometry (3 Credits)

Linguistic Geometry (LG) is a type of Game Theory in Artificial Intelligence, which permits to overcome combinatorial explosion and generate optimal strategies in real time. LG is currently changing the paradigm of military command and control in the USA and abroad. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5640 - Universal Compiler: Theory and Construction (3 Credits)

Theoretical foundations and step-by-step hands-on experience in the development of a compiler, which can tune itself to a new programming language. This is a must-take course for future software developers as well as those interested in applications of the theory of Computer Science. Cross-listed with CSCI 4640. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5654 - Algorithms for Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 7654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5660 - Numerical Analysis I (3 Credits)

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Cross-listed with CSCI 4650, MATH 4650, and MATH 5660. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5661 - Numerical Analysis II (3 Credits)

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Cross-listed with CSCI 4660, MATH 4660 and 5661. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

Typically Offered: Spring.

CSCI 5667 - Introduction to Approximation Theory (3 Credits)

Normed linear spaces, convexity, existence and uniqueness of best approximations. Tchebychev approximation by polynomials and other related families. Least squares approximation and splines. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5682 - Expert Systems (3 Credits)

Reviews and analyzes many expert systems documented in the literature, such as Mycin, Macsyma, and Xcon. Emphasis is given to the design of rule-based systems, the use of uncertain and incomplete information and system shells. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5690 - Knowledge Representation for Intelligent Systems (3 Credits)

An in-depth study of different types of knowledge representation in artificial intelligence for the efficient control of complex real-world systems like autonomous robots, space vehicles, and military units. Major emphasis is on search algorithms and heuristics, logical representation with applications to planning, formal linguistic representation. At the conclusion, all the theories studied are combined in the form of introduction to the state-of-the-art linguistic geometrical representation of complex control systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5701 - High-Performance Communication Systems and Network Analysis (3 Credits)

Protocols and architectures related to high performance communication systems as well as network performance analysis techniques are covered. Topics include Integrated Services Digital Networks (ISDN), Broadband ISDN, protocols such as ATM and SONET, and high performance network architectures such as optical networks. Analytical analysis of network performance includes queuing theory and stochastic processes. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5702 - Big Data Mining (3 Credits)

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 7702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5704 - Introduction to Distributed Systems (3 Credits)

Studies design, implementation and management of distributed systems, including communication issues, security reliability, resource sharing, and remote execution. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5728 - Software Engineering (3 Credits)

Groups of students plan, analyze and design large software projects. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5741 - Principles of Cybersecurity (3 Credits)

Focuses on the most common threats to cybersecurity as well as ways to prevent security breaches or information loss. Topics will include: understanding and thwarting hacker methods, authentication, cryptography, programming security, malware analysis, web, database and file server security, network and enterprise security methods. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5742 - Cybersecurity Programming and Analysis (3 Credits)

Focuses on cybersecurity related programming and analysis skills. Topics include: network and security application development, intrusion detection, automating security hardening. Students will design and develop security applications in multiple programming languages. Undergraduate algorithms and programming knowledge expected. Cross-listed with CSCI 4742. Max Hours: 3 Credits.
Grading Basis: Letter Grade

CSCI 5743 - Cyber and Infrastructure Defense (3 Credits)

Presents analytical study of state-of-the-art attack and defense paradigms in cyber systems and infrastructures. Analysis will focus on: theoretical foundations of cybersecurity, practical development of novel technical defense techniques and analysis of alternatives. Knowledge of undergraduate-level networking. Restriction: Restricted to students with graduate standing. Cross-listed with CSCI 4743. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 7765. Max Hours: 3 Credits.
Grading Basis: Letter Grade

CSCI 5771 - Introduction to Mobile Computing (3 Credits)

Provides the fundamentals of mobile computing. Studies existing and proposed solutions for ubiquitous computing. This course focuses on systems and networking issues involved with supporting mobility. Cross-listed with CSCI 4771. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5772 - Mobile and IoT Security (3 Credits)

This course concentrates on the computing of emerging mobile and IoT systems security in the Computer Science domain. The seminar will discuss recent research on computing for mobile user authentication, vulnerability risk detection of mobile/IoT systems, and software based defense mechanism. Restriction: Restricted to graduate school standing. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students with graduate standing.

CSCI 5780 - Theory of Distributed Computing (3 Credits)

Elements of the theory of distributed computing through fundamental algorithmic ideas, lower bound techniques, and impossibility results. Timing assumptions (asynchrony and synchrony), simulations between models (message passing and shared memory), failure types (crash and Byzantine). Restriction: Restricted to students with graduate standing. Note: Expected knowledge of algorithms equivalent to CSCI 3412. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5799 - Cloud Computing (3 Credits)

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing. Cross-listed with CSCI 7799. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 5800 - Special Topics (3 Credits)

These special topics courses cover recent developments in an aspect of computer science. Restriction: Restricted to students with graduate standing. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to students with graduate standing.

CSCI 5840 - Independent Study (1-3 Credits)

For graduate computer science students. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

CSCI 5866 - Advanced Mobile and Ubiquitous Systems (3 Credits)

This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5920 - Computer Game Design and Programming (3 Credits)

Computer Game Design and Programming introduces practical and example driven approaches to modern 3D game development. Topics include 3D modeling, character animation, UI design, level design, scripting, texture mapping, and sound effect. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5930 - Machine Learning (3 Credits)

Provides theoretical and computational foundations in machine learning to design and develop intelligent applications to perform object recognition, personalized recommendations, improve cybersecurity, fact-checking, forecasting and finding communities based on three classes of algorithms: supervised, unsupervised, semi-supervised and reinforcement learning. Restriction: Graduate Standing. Cross-listed with CSCI 4930. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5931 - Deep Learning (3 Credits)

Provides a foundation on deep learning; a sought-after skill in machine learning. Topics include neural network design & learning, restricted Boltzmann machine, convolution neural network, recurrent neural network, LSTMs, deep reinforcement learning, autoencoders, and evolving computation frameworks like TensorFlow, Keras. Restriction: Graduate Standing. Cross-listed with CSCI 4931. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5939 - Internship (1-3 Credits)

Faculty or employer-supervised employment in industry. Enrollment is limited to students who fully complete a contract for cooperative education credit by the last day of the drop or add period. Students who want to enroll this course should submit an official job description that must clearly show the level of work requires a bachelor's degree in the computer science field or equivalent work experience. This course will not be counted towards either MSCS or PhD in CSIS or EAS. Prereq: Complete at least two of category A courses (for MS) or complete Preliminary exam (for PhD) and 3.0 or better GPA. Restricted to students with a minimum of 1 full academic year of study at the graduate level. Repeatable. Max Hours: 3 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 3.

CSCI 5941 - Directed Study: Programming Project (3 Credits)

Software development project supervised by a faculty member approved by the Center for Computational Biology. Used towards a certificate in Computational Biology. Counts as an independent study. Prereq: CSCI 5451 and CSCI 5610. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 5951 - Big Data Systems (3 Credits)

Presents a practical while in-depth review of the principles of a series of modern data processing systems (e.g., Hadoop, Spark, TensorFlow) designed to address the Big Data challenges. In combination, these systems enable the data to knowledge (Big) data lifecycle. Restriction: Restricted to Graduate standing. Cross-listed with CSCI 5951. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 5952 - Big Data Science (3 Credits)

Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 7952. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6010 - Principles of Programming (3 Credits)

This course introduces students to fundamental principles and techniques in the design and implementation of modern programming such as C++, Java. Students learn how to write programs in an object oriented high level programming language. Weekly laboratory assignments will provide hands-on experience in this course. (non-CS majors) Prereq: meet MAPS requirements and familiarity with computer use. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 6020 - Data Structures and Algorithms (3 Credits)

This course introduces students to fundamental skills in computer science such as data structures and computer algorithms. Students will learn how to design efficient algorithms and analyze them. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

D-EN-Pre: CSCI 6010

CSCI 6030 - Computer Systems & Application (3 Credits)

This course surveys essential technologies such operating systems, database systems, and the Internet. Students study the basic of operating systems, database systems, and the Internet. Weekly laboratory experiments will provide hands-on experience. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

D-EN-Pre: CSCI 6010

CSCI 6040 - Teaching Practice of Computer Science (3 Credits)

This course provides students the opportunity for practicing and developing courses for adolescents using previously acquired knowledge. Students will design and develop a computer science class of their interest and appropriate to their area of expertise which they will offer at their school. (non-CS majors) Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 6020 and 6030

CSCI 6595 - Computational Methods in Nonlinear Programming (3 Credits)

Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate directional methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6664 - Numerical Linear Algebra (3 Credits)

Offered every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 6950 - Master's Thesis (1-9 Credits)

Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

Additional Information: Report as Full Time.

CSCI 6960 - Master's Report (3 Credits)

Students seeking a Master of Science in computer science, who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under supervision of a full-time CS graduate faculty. Student must present their results to a faculty committee. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

CSCI 6970 - MS Research Report (0 Credits)

This course is for students who select the Plan III (Course Only) option to complete their MS degree requirements. Graduating students must register for this course their final semester and submit a final written research paper on a subject specified by a CSE faculty committee.

Grading Basis: Pass/Fail Only

CSCI 7002 - Computer Security (3 Credits)

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric crypto systems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more.

Prereq: CSCI 5451. Cross-listed with ISMG 7002. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7173 - Computational Complexity and Algorithms (3 Credits)

A solid, in-depth theoretical foundations in computing, computational complexity, and algorithmics. Various algorithms, including both discrete and non-discrete problem domains. NP-complete and other complete classes of problems/languages. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CSCI 5446

CSCI 7200 - Advances in Management Information Systems (3 Credits)

Provides a broad coverage of research on the management of information technology. The course covers the systems-oriented research, organizational-oriented research, and information systems economics research. Prereq: PhD standing. Cross-listed with ISMG 7200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7210 - Topics in Analytical Research in Management Information Systems (3 Credits)

Covers a variety of analytical research topics of interest to the IS research community including the evaluation of data mining algorithm performance, cost sensitive learning and outlier detection. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7211 - Topics in Behavioral-Organizational Research in Management Information Systems (3 Credits)

Provides in-depth exposure to some key behavioral, management and organizational theories and models used in Information Systems research. Covers topics in socio-technical, trust, computer self-efficacy, organizational transformation, organizational learning, resource-based and coordination theories. Prereq: Admission to the CSIS PhD program. Cross-listed with ISMG 7211. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7407 - Security & Cryptography (3 Credits)

A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGamal, and applications to current and future technologies. Restriction: Restricted to Graduate Standing. Cross-listed with CSCI 5407. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7502 - Research Methods (3 Credits)

Promotes research skills. Involves presenting a research topic and discussions of its merits, reviewing journal articles, writing a paper and/or a proposal in the NIH/NSF format in the student's area of research. Prereq: PhD student standing or permission of instructor for MS students who are writing a thesis. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Prereq: Graduate standing. Cross-listed with CSCI 5551. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Cross-listed with CSCI 5552. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews and presentations, students carry out a semester long team project within the scope of one of the above topics. Cross-listed with CSCI 5574. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 5582. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7595 - Computer Animation (3 Credits)

This course introduces the state of the art techniques for modern computer animation focused on a practical, example driven approach to learning the unique art of 3D animation. Topics include modeling, kinematics, rigging, textures, physically based dynamics, and rendering. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7654 - Algorithms for Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: fixed-interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing and broadcasting. Cross-listed with CSCI 5654. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7702 - Big Data Mining (3 Credits)

Introduces techniques to discover patterns in Big Data. Selected topics: time-series analysis at scale, big graph mining, big scientific data mining, and spatiotemporal data mining, with applications in precision medicine, social network analysis, transportation, scientific data analysis, and geospatial analytics. Cross-listed with CSCI 5702. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7711 - Bioinformatics I (4 Credits)

(BIOL 7711-Offered on a semester basis from H.S.C.) What is Bioinformatics and why study it? How is large-scale molecular biology data generated, where and how can researchers gain access to it, what computational analyses are possible and computational techniques for solving inference problems in molecular biology? Prereq: Permission of instructor. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

CSCI 7712 - Bioinformatics II (4 Credits)

(BIOL 7712-offered on a semester basis from H.S.C.) Inference problems and computational techniques for molecular biology, with emphasis on machine learning approaches. Use of computational induction techniques focused on information extraction from biomedical literature, inference of biochemical networks from high-throughput data and prediction of protein function. Estimation, clustering, discrimination and regression. Prereq: CSCI 7711. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

CSCI 7765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate standing. Cross-listed with CSCI 5765. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7799 - Cloud Computing (3 Credits)

This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project. Topics include cloud computing design and architectures, service models, virtualization, advanced computer networks, programming, often software, and security. Note: Operating System, Computer Networks, and programming experience are recommended for success in this course. Prereq: Graduate standing. Cross-listed with CSCI 5799. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

CSCI 7800 - Special Topics (3 Credits)

These special topics courses cover recent developments in an aspect of computer science. Prereq: As determined by instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CSCI 7840 - Independent Study (1-6 Credits)

Offers doctoral students opportunity for independent, creative work under supervision of a CSE full-time graduate faculty. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

CSCI 7866 - Advanced Mobile and Ubiquitous Systems (3 Credits)

This course covers various aspects of mobile and ubiquitous systems to provide an in-depth understanding of principles, state-of-the-art solutions and challenges in design and implementation of such systems. Restriction: Restricted to students with graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 7952 - Big Data Science (3 Credits)

Introduces methodologies that enable Big Data lifecycle. Selected topics: topic modeling, causality analysis, structure learning, learning with less supervision, and massive-scale data analytics, with applications in social media analysis, computational biology, climate modeling, health care, and traffic monitoring. Restriction: Graduate standing. Cross-listed with CSCI 5952. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

CSCI 8990 - Doctoral Dissertation (1-9 Credits)

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Additional Information: Report as Full Time.

Construction Engineering and Management (CEMT)

CEMT 5231 - Construction Materials and Methods (3 Credits)

This course serves as an introduction to the primary materials and methods used to construct buildings and infrastructure across the United States, including concrete, wood and steel. Students explore processes related to specifying and installing materials, as well as analyze various material performance characteristics. Students are required to complete lectures, videos and class activities. Students also research and present information on a wide range of materials and construction processes. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

CEMT 5232 - Construction Planning and Control (3 Credits)

This course presents knowledge on planning and controlling of construction projects. Students will learn the basics of construction planning to develop work breakdown structure and activity list, estimate activity cost and duration, and identify job logic and precedence relationships. Several scheduling techniques will be presented in this class, including bar chart, network scheduling, uncertainty in scheduling (PERT), limited resources scheduling, resource leveling, line of balance, and time-cost tradeoff analysis. Furthermore, this class will provide knowledge on cash flow analysis and construction control techniques such as Earned Value method. Students will acquire skills on the use of currently available computer scheduling and planning software such as Primavera 6 and Navisworks Manage to create 5D models to visualize sequence of the construction activities. In addition, students will form teams and work on a project throughout the semester to apply the skills that they learn in class. Cross-listed with CVEN 4232. Prereq: CEMENT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010) or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 and a statistics course (MATH 2830, 3800, CVEN 3611, ELEC 3817, or BANA 2010) or graduate standing.

CEMT 5233 - Construction Cost Estimating (3 Credits)

This course presents the application of scientific principles to rough and detailed cost estimating for construction. The course starts with an introduction to estimating and how it fits in bid/proposal process and construction management. Quantity take offs, putting costs to those quantities, overhead costs, cost markups and profits; and computerized estimating will be explored. The project includes quantity take and cost estimate for the concrete and metals portion of an actual project. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or Graduate standing.

CEMT 5234 - Sustainable Construction (3 Credits)

This course will serve as an introduction to major components and technologies used in sustainable design and construction to create healthy, environmentally-sensitive built environments. Content focuses on construction processes, renewable energy systems, healthy buildings, natural and cultural resources, and traditional as well as cutting-edge building techniques. Course participants will gain knowledge about effective sustainable practices through active learning by engaging in case studies, class presentations, and group activities. Numerous guest speakers will share first-hand experience regarding implementation and professional practice of sustainable principles in the real-world. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

CEMT 5235 - Advanced Construction Engineering (3 Credits)

This course starts with a high-level overview of Construction Engineering Management including organizations involved, current approaches and industry challenges. The course delves into contracts, estimating and managing earthwork, temporary construction, scheduling, quality and others. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 4235. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

CEMT 5236 - Project Management Systems (3 Credits)

Address the basic nature of managing projects and the advantages and disadvantages to this approach. Introduce the characteristics, techniques, and problems associated with initiating, planning, executing, controlling, and closeout of projects. Learn about the International Standards of PM and how to use them. Develop a management perspective about projects to help develop future project managers. Max hours: 3 Credits.

Grading Basis: Letter Grade

CEMT 5237 - Advanced Project Management (3 Credits)

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 6237. Max hours: 3 Credits.

Grading Basis: Letter Grade

CEMT 5238 - Integrated Construction Leadership (3 Credits)

This interdisciplinary course focuses on leadership. It is structured to feature top level executives in architecture, engineering and construction (AEC) industries to discuss current industry practice. It provides students opportunities to apply management and leadership principles in construction related projects and activities. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 6238. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

CEMT 5239 - Introduction to Temporary Structures and Construction Engineering (3 Credits)

This course will introduce the many types of temporary structures that are integral in the completion of construction projects. The temporary structures to be discussed include but are not limited to formwork, falsework, scaffolding, Support of Excavation (SOE), and equipment bridges. Construction Engineering will also be introduced including the application of structural engineering to crane picks and demolitions. The course includes planning, management and design aspects. The project includes the delivery of a formwork design that stresses the importance of constructability, cost, while providing updates throughout the project to the instructor. Cross-listed with CEMENT 4239. Prereq: CEMENT 2100 with a C- or better or junior or graduate standing. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 with a C- or better or junior or graduate standing.

CEMT 5240 - Building Information Modeling (BIM) (3 Credits)

Building Information Modeling is an advanced approach to facility design and construction using object-oriented 3-D models. It can be integrated in the design and construction for analytical purposes, including design, visualization, quantity takeoff, cost estimating, planning, and facility management. Prereq: CEMENT 2100 or CVEN 4230. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230.

CEMT 5242 - Construction Safety (3 Credits)

This course is a study of safety practices in the construction industry and the specific safety procedures used in safety management of a construction project. Topics include safety risks inherent in construction projects, the roles of government, the judicial system, the insurance industry, designers and project owners in safety management and the economic impact of injuries. Advanced topics include safety risk quantification and analysis, design for safety and emerging technologies. Prereq: CEMENT 2100 or CVEN 4230. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230.

CEMT 5246 - Construction, Business and Innovation (3 Credits)

AEC professionals rely on technical and soft (social) skills to solve complex challenges. The interdisciplinary nature of project delivery, to an increasing extent, requires professionals to collaborate across disciplines. This course explores innovation and collaboration at the interface of construction and business. Max hours: 3 Credits. Grading Basis: Letter Grade

CEMT 6235 - Advanced Construction Engineering (3 Credits)

This course starts with a high-level overview of Construction Engineering Management including organizations involved, current approaches and industry challenges. The course delves into contracts, estimating and managing earthwork, temporary construction, scheduling, quality and others. The course is delivered in an accelerated 8-week format. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

CEMT 6237 - Advanced Project Management (3 Credits)

A survey of advanced topics in project management building on the Project Management Systems course and utilizing the Project Management of Knowledge. Case studies, complex problems, and a class project will be utilized in the course to bring a practical perspective to the conceptual lessons. Cross-listed with CVEN 5237. Max Hours: 3 Credits. Grading Basis: Letter Grade

CEMT 6238 - Integrated Construction Leadership (3 Credits)

This interdisciplinary course focuses on leadership. It is structured to feature top level executives in architecture, engineering and construction (AEC) industries to discuss current industry practice. It provides students opportunities to apply management and leadership principles in construction related projects and activities. The course is delivered in an accelerated 8-week format. Cross-listed with CVEN 5238. Prereq: CEMENT 2100 or CVEN 4230 or graduate standing. Max Hours: 3 Credits. Grading Basis: Letter Grade

Prereq: CEMENT 2100 or CVEN 4230 or graduate standing.

Counseling (COUN)

COUN 5000 - Human Sexuality (3 Credits)

Students will become familiar with human sexuality across the life span. Ecological and family systems theories will provide an understanding of human sexuality from a systemic perspective. Implications for working with individuals, families, and couples will be examined. Prereq: COUN 5010. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5010 - Counseling Theories (3 Credits)

Focuses on counseling theories: Psychodynamic, Adlerian, Person-Centered, Existential, Behavioral, including DBT, Cognitive Behavioral, Gestalt, & Reality Therapy. Also includes an overview of the history of the counseling profession and the role and function of counselors in various settings. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5050 - Foundations of Student Affairs (3 Credits)

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFS 4050. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COUN 5070 - Law and Ethics in Higher Ed and Student Affairs (3 Credits)

This course will introduce students to the laws that impact college students and institutions of higher education. Graduate students will obtain knowledge of and the necessary skills to apply a code of ethics to their practice in student affairs. Max hours: 3 Credits. Grading Basis: Letter Grade

COUN 5100 - Techniques of Counseling (3 Credits)

Students practice basic counseling skills, develop therapeutic intervention strategies, and improve the effectiveness of their communication by practicing listening and responding. Videotaped role-plays are utilized. Prereq: COUN 5010 and 5810 and COUN-MA or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and COUN 5810 and COUN-MA OR CAFT_MA majors within the School of Education and Human Development.

COUN 5110 - Group Counseling (3 Credits)

Learn group theory and dynamics. Practice facilitating a group. Learn about screening, group membership and styles, roles and behavior, termination of groups. Extensive practice in laboratory setting. Prereq: COUN 5010, COUN 5100 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5810 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5120 - Counseling Grief and Loss (3 Credits)

This elective course is an introduction and study of the field of bereavement in counseling. Studies focus on relating to client's experience with grief, loss and/or trauma through lectures, speakers, videos, readings, experiential in-class simulations, self-discovery and introspection. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5130 - College Student Development (3 Credits)

This course examines theories of college student development including student learning and growth during the postsecondary years. This course will provide an introduction to psychosocial, cognitive, moral, and social identity development theories used to explain college student development. Cross-listed with HDFS 4130. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

COUN 5150 - Family Counseling/Therapy (3 Credits)

Introduces systemic and family theories and intervention strategies. Emphasis on historical development of systems theory. Prereqs: COUN 5010 and COUN 5810 or COUN-MA CFT or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: COUN 5010 and COUN 5810 or COUN-MA CFT or CAFT majors within the School of Education and Human Development.

COUN 5160 - Techniques in Family Counseling/Therapy (3 Credits)

This didactic and experiential course presents an overview of techniques and theories in family therapy. It will help students continue to develop a theoretical framework for engaging in theory driven therapeutic interventions via practice family therapy role plays Prereq: COUN 5010, 5100 and 5150, or COUN-MA-CFT and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5150 or CAFT_MA or COUN-MA-CFT majors.

COUN 5180 - Counseling/Therapy Couples (3 Credits)

This course is didactic and experiential dealing with therapeutic techniques applied to the improvement of intimate/couple relationships. Emphasis is placed on empirically based assessment, diagnosis, and treatment of couples' problems. Special topics include: cohabiting couples, gay and lesbian couples, remarried couples, cross-cultural couples, ethical and moral dimensions of couple counseling, unique couple issues, and the effectiveness of couple therapy. Prereq: COUN 5010, COUN 5100, and COUN 5150 or COUN MA-CFT and CAFT majors within the School of Education and Human Development. Cross-listed with CMFT 5180. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5150 or CAFT_MA or COUN-MA-CFT majors.

COUN 5280 - Addictions Counseling (3 Credits)

Includes treatment strategies for clinicians in addressing varieties of addictive behaviors including substance, abuse, eating disorders, gambling and sexual addiction. Cultural dimensions of addictions are also considered. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restricted to Graduate level students in the School of Education and Human Development

COUN 5330 - Counseling Issues and Ethics (3 Credits)

An in-depth examination of ethical and legal issues in the field. Topics include working with individuals and family systems, licensure, professional associations, record keeping and statutory requirements. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and COUN 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5400 - Career Development (3 Credits)

Development of competencies in career development counseling. Theories of work systems, psychological dynamics, information systems, and decision making models are covered. Interacting with work or family systems and other subsystems is emphasized. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restricted to Graduate level students in the School of Education and Human Development

COUN 5425 - Developing & Implementing a School Counseling Program: ASCA (3 Credits)

The course is specifically designed to provide training for school counselors and related professionals to develop and implement a comprehensive counseling and guidance program, which incorporates the ASCA National Model. Prereq: COUN 5110, 5400, and 5815, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5110, 5400, and 5815, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN majors within the School of Education and Human Development.

COUN 5500 - Diversity, Inclusion, Social Justice in Higher Education (3 Credits)

An examination of society, media, and public and educational policy and their impact on higher education access and persistence for marginalized groups. Students are called to consider how student affairs professionals might promote social justice for marginalized student groups. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5810 - Multicultural Counseling Issues for Individuals and Families (3 Credits)

Offers introduction to competent multicultural and social justice counseling. Students develop the awareness, knowledge, skills and action competences necessary for culturally responsive interventions with diverse communities. The course explores issues of ethnicity, culture, age, disability, and sexual orientation and learn about multicultural and social justice interventions for addressing these issues in counseling. Restricted to Graduate level students in the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restricted to Graduate level students in the School of Education and Human Development

COUN 5815 - Introduction to School Counseling (3 Credits)

This course emphasizes the unique and varied role of the school counselor and school counseling programs in diverse public schools. The course focus will be on learning the various skills necessary to meet the needs of school age students and others in the school community. In addition, the course will cover The ASCA model of comprehensive developmental school counseling activities, and focus on practical resources for counseling students in diverse school settings. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5820 - Strategies of Agency Counseling (3 Credits)

Students learn the role and function of the counselor in community agency settings. Intervention strategies, consultation, administration of community mental health agencies. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and COUN 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5825 - The Business Of Private Practice (3 Credits)

This course is designed to teach students how to start and manage a successful private practice in counseling. Emphasis is placed on understanding and navigating the business side of professional counseling. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5830 - Special Topics (1-6 Credits)

Specific topics vary from semester to semester. Intervention strategies with children, issues in abuse, violence, incest, legal issues, adult counseling, grief, death and dying, private practice. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5835 - Gender And Sexual Orientation (3 Credits)

Investigates constructions of gender and sexuality in the systemic context of individuals, relationships, families, and culture. Emphasis will be placed on developing critical thinking and clinical skills that engage diverse clients in a respectful, ethical, and effective manner in therapy. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 5840 - Independent Study: COUN (1-4 Credits)

Individually directed research activity on special topics not covered by course offerings. Degree students only, with advance approval by major, professor and department chair. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5910 - Practicum in COUN (6 Credits)

Supervised counseling practice in the counseling lab and appropriate settings (150 clock hours). Emphasis on individual and group counseling techniques and therapeutic intervention strategies. Prereq: all counseling course work must be completed. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 5915 - Practicum in School Counseling (3 Credits)

This class will provide school track students with 3 credits of fieldwork at a developmental level of their choice. The course will require students to work with a school counselor activities that the counselor is assigned under supervision. Students will develop skills in needs assessment, developing classroom guidance activities and running the activities; they will sit in on IEP conferences, help conduct college fairs, administer career assessment inventories and standardized assessments, learn to place students in appropriate classes, and provide responsive counseling services on an as needed basis. Prereq: COUN 5010, COUN 5110, COUN 5400, COUN 5425, COUN 5810, COUN 5815, COUN 6230.

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: COUN 5010, COUN 5110, COUN 5400, COUN 5425, COUN 5810, COUN 5815, COUN 6230. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5930 - Internship in Counseling (3-6 Credits)

Supervised internship of 600 clock hours. Intern performs activities of a regularly employed professional in an approved community site. Prereq: COUN 5910. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Students must register for 3 or 6 credit hours. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

Prereq: COUN 5910 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 5940 - Internship in Higher Education and Student Affairs (3-6 Credits)

The internship is the final academic experience in the acquisition of the Master's degree in counseling. This course builds on the theoretical and skill-building courses and is intended to give students practical experience in higher education and student affairs. Emphasis on personal and professional development as higher education and student affairs professionals. Students must register for 3 or 6 credit hours. Prereq: COUN 5050 and COUN 5500. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: COUN 5050 and COUN 5500

COUN 6000 - Introduction to Sex Therapy (3 Credits)

Provides an overview of human sexuality over the life cycle, addressing social, psychological, and physiological aspects of human sexuality. Etiology of human sexuality diagnoses and treatment of problems related to human sexuality are addressed. Note: This course is a component in the couple and family program and required for MFT licensure. Prereq: COUN 5010, COUN 5100, COUN 5110, COUN 5150. Prereq or Coreq: COUN 5160. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Cross-listed with CMFT 6000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, COUN 5110, COUN 5150 Prereq or Coreq: COUN 5160 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6100 - Spiritual Dimensions of Counseling (3 Credits)

A didactic and experiential course involving the following content areas: theories of spiritual development, a survey of religious traditions, assessment, ethical issues, self-of-the-therapist issues, and treatment interventions and strategies in working with clients' values. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6140 - Counseling/Therapy with Children, Adolescents, and their Parents (3 Credits)

This is a didactic and experiential course dealing with therapeutic techniques applied to the improvement of child functioning, and parent-child relationships. Emphasis is placed on play therapy, assessment, diagnosis and treatment of childhood and adolescent disorders, parent education, crisis intervention. Prereq: COUN 5010, COUN 5100, COUN 5150 and LDFS 6200. Restriction: Restricted to COUN majors within the School of Education and Human Development. Cross-listed with CMFT 6140. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100, 5150 and LDFS 6200 Restriction: Restricted to COUN majors within the School of Education and Human Development

COUN 6150 - Introduction to Emotionally Focused Couple Therapy (3 Credits)

This course is designed to help students conceptualize couple distress from an attachment perspective and gain foundational knowledge in Emotionally Focused Therapy (EFT). The organization of the course includes observation of therapy sessions, presentations of theory and clinical techniques, skills training exercises, and discussion of specific cases, clinical material and issues. Prereq: COUN 5010, COUN 5100, COUN 5150, COUN 5160. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, COUN 5150, COUN 5160

COUN 6160 - Advanced Assessment: Theory and Treatment in Family Systems (3 Credits)

This is a didactic and experiential course focusing on family assessment instruments and their use in family therapy. Emphasis is placed on the role of assessment in family therapy, the relationship of assessment to treatment planning and evaluation, gaining familiarity with a variety of assessment instruments, and learning to apply assessment skills to real-world clients. Prereq: COUN 5010, 5100, 5150, 5160, 6250 and RSEM 5110 or COUN MA CFT or CAFT majors within the School of Education and Human Development. Max hours: 3 Credits

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100, 5150, 5160, 6250 and RSEM 5110 or COUN MA CFT or CAFT majors within the School of Education and Human Development

COUN 6170 - Issues In Family Studies (3 Credits)

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Prereq: COUN 5010. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Cross-listed with COUN 7170. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6200 - Trauma Informed Care for Diverse Populations and Co-occurring Disorders (3 Credits)

This course will prepare students to become more trauma informed and understanding of cooccurring disorders within the realm of substance use and mental health treatment in their future careers of certified addictions counselors and other mental health positions in community and private sectors. The course will also demonstrate inclusivity in TIC. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6230 - Developmental Counseling in Schools: Prevention & Intervention (3 Credits)

This course offers the tools to provide developmental counseling services in the schools, including prevention through classroom counseling activities linked with the curriculum, and responsive services. Prereq: COUN 5110, 5400, 5810, LDFS 6200, RSEM 5110 and 5120. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5110, 5400, 5815, LDFS 6200, RSEM 5110 and 5120

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6240 - Consultation Strategies (3 Credits)

Focuses on the development of consultation skills and implementation of strategies. Students are exposed to major theories of the consultation process. In addition, this course provides the opportunity to practice consultation and implementation strategies within a system: an agency, business setting, or educational setting. Prereq: COUN 5010 or permission of instructor. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6250 - Mental Health Diagnosis (3 Credits)

This course addresses individual diagnosis from a variety of perspectives: Biological, developmental, medical, neurological, psychosocial, cultural and interpersonal. It will provide students with a broad theoretical base for understanding psychopathology, from not only an individual, descriptive, symptom-based perspective as presented in the DSM-5, but also from a contextual systemic perspective including developmental hallmarks, familial patterns and socio-cultural contributors. Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 and 5810. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development.

COUN 6310 - Facilitating Sociopolitical Development Theory & Actn (3 Credits)

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 7310. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6320 - Participatory Research Methods in Context (3 Credits)

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a study in their professional context. Cross listed with COUN 7320. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 6330 - Advanced Seminar in Counseling and Psychotherapy (3 Credits)

Professional analysis of major trends in counseling and psychotherapy. Specific emphasis topics identified. Prereq: COUN 5010, 5100 and 5330. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100 and 5330 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6810 - Advanced Multicultural Counseling (3 Credits)

Offers essential preparation for competent multicultural and social justice counseling practice with culturally diverse clients, and families. Students learn about effective multicultural counseling and advocacy skills. The course explores the impact of ethnicity, culture, age, disability, sexual orientation, etc., on individual behavior, interpersonal relationships, and learn about multicultural and social justice interventions and techniques for addressing these issues in counseling. Prereq: COUN 5010, 5100 and 5810. Restriction: Restricted to COUN majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, COUN 5100, and COUN 5810 Restriction: Restricted to COUN majors within the School of Education and Human Development

COUN 6840 - Independent Study (1-4 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6910 - Advanced Practicum in Counseling (3-6 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 6950 - Master's Thesis (4 Credits)

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

Additional Information: Report as Full Time.

COUN 7100 - Advanced Theories and Techniques in Psychotherapy (3 Credits)

Learn and practice advanced techniques for addressing adult and adolescent clinical problems. Examine efficacy research on specific counseling techniques as associated with particular approaches in counseling. Prereq: COUN 5010, 5100 and 5820. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010, 5100 and 5820 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

COUN 7170 - Issues in Family Studies (3 Credits)

This is a family studies course that is both didactic and experiential. It is designed to assist you to become more informed about contemporary family issues that affect you, your clients, and society. The course major components include: theories of "normal" family processes and life cycle development, family composition, and social issues that impact families and family therapy. Cross-listed with COUN 6170. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 7310 - Facilitating Sociopolitical Development Theory & Actn (3 Credits)

Participants will learn to use dialogic instructional strategies to create student-teacher partnerships that respect student voice and affirm the lived experiences of students. Participants will learn strategies to engage students and themselves in critical inquiry about identity, privilege, and social justice. Cross listed with COUN 6310. Max hours: 3 Credits.

Grading Basis: Letter Grade

COUN 7320 - Participatory Research Methods in Context (3 Credits)

This course will introduce students to participatory research methods, including Youth Participatory Action Research (YPAR), PAR, youth participatory evaluation, and design based research. Graduate students will study current examples of this work, design, and conduct a study in their professional context. Cross listed COUN 6320. Max hours: 3 Credits.

Grading Basis: GRD

COUN 7800 - Supervision in Counseling and Psychotherapy (3 Credits)

Examines training principles, processes, and practices in clinical supervision. Emphasis on individual and family therapy supervision.

Prereq: COUN 5010, 5100, 5910 and 5930. Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Prereq: COUN 5010, 5100, 5910 and 5930 Restriction: Restricted to COUN and CAFT majors within the School of Education and Human Development

Courses in the Cohort MBA Program (PMBA)

PMBA 6310 - International Business Abroad (1.5 Credits)

The MBA International Business Study Abroad is an experiential learning course conducted abroad. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6320 - Career and Professional Development (1.5 Credits)

This course focuses on preparing students to successfully seek their next position and develop the professional skills to excel in their long-term career. Sample topics include: Personal Brand Readiness; Business Communication Skills; Business Professionalism; and Interview Skills. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6520 - Leading a Productive Workforce (1.5 Credits)

This course addresses how leaders can effectively manage their employees. Some topics that will be addressed in the course include: leadership styles and approaches; self-management; personality differences; values, attitudes, perception and motivation; and effective communication and conflict resolution. Note: Credit cannot be received for this course if BUSN 6520 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6522 - Building Effective Work Environments (1.5 Credits)

This course focuses on how leaders can build organizational environments where individuals and teams can be productive. Some topics that will be addressed include: team formation and management; effective organizational structures and cultures; some effective human resource practices related to selection, evaluation and development; and managing power, politics and change. Note: Credit cannot be received for this course if BUSN 6520 has already been completed. Pre-req: Leading a Productive Workforce. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6530 - Data Analytics I (1.5 Credits)

This course covers basic statistical concepts and methods including descriptive and graphical tools, exploratory data analysis, statistical inference, and bivariate methods. Emphasis is placed on proper choice of methods and interpretation of the results. Lectures, assignments, and projects are grounded in real data taken from business applications. Note: Credit cannot be received for this course if BUSN 6530 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6532 - Data Analytics II (1.5 Credits)

This course allows decision-makers to understand relationships among key business metrics. Applications of these methods may be found throughout the organization from human resources management and marketing to accounting and finance. Multiple regression provides the methodological framework. Case studies are used extensively throughout the course. Note: Credit cannot be received for this course if BUSN 6530 has already been completed. Prereq: PMBA 6530. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6530. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6540 - Business Law (1.5 Credits)

This course provides students with a working knowledge of the legal parameters for business decision making in four areas: 1) tort law, 2) business organizations, 3) employment law, and 4) intellectual property law. The influence of legal issues on an organization's decision-making is stressed. Note: Credit cannot be received for this course if BUSN 6540 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6542 - Business Ethics (1.5 Credits)

This course emphasizes analyzing business decisions from an ethical perspective, including how to spot and address red flags that foster unethical behavior. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted. Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Note: Credit cannot be received for this course if BUSN 6540 has already been completed. Prereq: PMBA 6540. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6540. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6550 - Financial Accounting (1.5 Credits)

This course emphasizes the use of external financial reporting information when making business decisions, particularly to assess a firm's overall financial condition and performance for investment and credit decisions. To understand the underlying basis of financial reporting the concepts and mechanics of generating financial statements is addressed in a nontechnical manner. Note: Credit cannot be received for this course if BUSN 6550 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6552 - Management Accounting (1.5 Credits)

This course emphasizes the use of management accounting information when making business decisions within organizations. Topics include product and service costing, planning profitability and controlling operations through budgeting techniques and short-term non-routine decision-making. Note: Credit cannot be received for this course if BUSN 6550 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6560 - Marketing Management I (1.5 Credits)

This course focuses on applications of analytical tools for understanding the dynamic marketing environment and creating value propositions, selecting target markets, and determining positioning strategies.

Students evaluate and formulate the corresponding elements of a Marketing Plan. Note: Credit cannot be received for this course if BUSN 6560 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6562 - Marketing Management II (1.5 Credits)

This course continues Marketing Management Part I. The focus is on applications of analytical frameworks and decision-making regarding alternative product, price, service, channels, communication, and other marketing mix strategies. Students create the corresponding elements of a Marketing Plan. Note: Credit cannot be received for this course if BUSN 6560 has already been completed. Prereq: PMBA 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6570 - Dynamics of Global Business (1.5 Credits)

This course examines the dynamics of global business from both a multinational and entrepreneurial perspective. Topics covered include the cultural, political, legal, economic-financial, trade and investment, and sustainability aspects of the international business environment. Offered prior to the international field trip, this course helps students cultivate a global mindset and provides them with key environmental and contextual information to enrich their international field study experience. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6572 - Global Business Operations and Practices (1.5 Credits)

This course examines key operations and practices of firms engaged in cross-border business. Topics covered include (1) the evaluation and selection of markets, partners, and route to markets, and (2) the management of business functions (e.g., marketing; human resource management; supply chain, operations, and information technology management; financial management and accounting) in an international context. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6610 - Digital Leadership and Governance (1.5 Credits)

This course examines strategic issues involved with the effective management of information technology (IT) in businesses including the role of IT as a driver of business innovation and strategy. By examining how an organization makes IT investment decisions, implements new IT assets, delivers services, assesses risk and measures its own performance, a Digital Leadership and Governance portfolio can assure the organization is meeting its compliance and security responsibilities, along with fulfilling strategic objectives. Note: Credit cannot be received for this course if BUSN 6610 or ISMG 6180 have already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6612 - Data Management Strategy (1.5 Credits)

This course provides students with an overview of the key concepts for establishing an organization's data management strategy, ensuring that its operational and analytical needs are efficiently, effectively, and securely addressed. The course emphasizes real-case scenarios that companies face when addressing global operational and analytical data challenges. The course also addresses current trends in managing structured data as organizations move to the Cloud-based computing services. Notes: Credit cannot be received for this course if BUSN 6610 or ISMG 6180 have already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6620 - Applied Microeconomics (1.5 Credits)

This course provides an overview of “thinking like an economist”. The course covers an introduction to supply and demand and the basic forces that determine an equilibrium in a market economy. Students learn to understand: consumer behavior, firm behavior, and analyze different types of market structures (monopoly, oligopoly and a competitive market). Note: Credit cannot be received for this course if BUSN 6620 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6622 - Applied Macroeconomics (1.5 Credits)

This course explores the causes and effects of unemployment, interest rates, and inflation. The roles of the central bank and the government in implementing policy are discussed. The course provides models of macroeconomics that are introduced and illustrated using historical US data. The course prepares a student to take intermediate macroeconomics. Note: Credit cannot be received for this course if BUSN 6620 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6630 - Operations Management (1.5 Credits)

This course is concerned with operations management, including topics such as resource planning, inventory control, logistics management, network configurations, demand management, and workflow efficiencies. Quantitative analytics to support decision-making is used. Current innovations and future trends in operations are included. Note: Credit cannot be received for this course if BUSN 6630 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6632 - Analytics for Operations (1.5 Credits)

This course is concerned with building and applying formal models to solve important tactical and strategic problems found in the operations side of both private and public organizations. An emphasis is placed on optimization methods and covers skills necessary to build and evaluate models and to understand the reasoning behind model-based analysis. Note: Credit cannot be received for this course if BUSN 6630 has already been completed. Prereq: PMBA 6630. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6630. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6640 - Finance Management I (1.5 Credits)

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Note: Credit cannot be received for this course if BUSN 6640 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6642 - Finance Management II (1.5 Credits)

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Note: Credit cannot be received for this course if BUSN 6640 has already been completed. Prereq: PMBA 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6710 - Strategic Management (1.5 Credits)

This course is a graduate level introduction to the topic of strategic management – definitions, core ideas, and a broad understanding of what is required for the firm to build a competitive advantage that is sustainable over the medium to long term. Note: Credit cannot be received for this course if BUSN 6710 has already been completed. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

PMBA 6712 - Strategy in Practice (1.5 Credits)

The capstone of the MBA and a deeper dive into strategic management – covering the essential tools used to formulate a firm’s strategy, but also building on the core functional area courses to tackle strategy in practice via an in-depth, group-based simulation. Note: Credit cannot be received for this course if BUSN 6710 has already been completed. Prereq: PMBA 6710. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Prereq: PMBA 6710. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Courses in the One Year MBA Program (AMBA)

AMBA 5939 - Internship for MBAs (1-6 Credits)

Supervised experiences involving the applications of concepts and skills in an employment setting. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Repeatable. Max Hours: 6 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 6.

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6201 - Leading in Organizations (1.5 Credits)

This course addresses core leadership challenges, such as motivating a diverse employee base, working in and managing teams, designing an organization and building a healthy culture, leading organizational change, and managing power and politics in the workplace. Restrictions: Restricted to AMBA majors within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6202 - Workforce Management (1.5 Credits)

This course focuses on the management and deployment of human resources in organizations. Students learn how leaders can utilize recruitment and staffing strategies, performance management, compensation and benefits, data and analytics, and training and leadership development programs to foster a successful workforce. Restrictions: Restricted to AMBA majors within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6210 - Data Analytics I (1.5 Credits)

This course covers basic statistical concepts and methods including descriptive and graphical tools, exploratory data analysis, statistical inference, and bivariate methods. Emphasis is placed on proper choice of methods and interpretation of the results. Lectures, assignments, and projects are grounded in real data taken from business applications. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6211 - Data Analytics II (1.5 Credits)

This course allows decision-makers to understand relationships among key business metrics. Applications of these methods may be found throughout the organization from human resources management and marketing to accounting and finance. Multiple regression provides the methodological framework. Business case studies are used extensively throughout the course. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6220 - Business Law (1.5 Credits)

This course provides a working knowledge of the legal parameters in four areas: 1) employment law, 2) business organizations, 3) intellectual property and 4) tort law. The influence of legal issues on an organization's decision making is stressed. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6230 - Financial Accounting (1.5 Credits)

This course emphasizes the use of external financial reporting information when making business decisions, particularly to assess a firm's overall financial condition and performance for investment and credit decisions. To understand the underlying basis of financial reporting the concepts and mechanics of generating financial statements is addressed in a nontechnical manner. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6231 - Management Accounting (1.5 Credits)

This course emphasizes the use of management accounting information when making business decisions within organizations. Topics include product and service costing, planning profitability and controlling operations through budgeting techniques and short-term non-routine decision making. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6240 - Marketing Principles (1.5 Credits)

This course focuses on marketing theory and its application, emphasizing the study of core principles that can be applied to a wide range of marketing situations, both large and small. The course encourages critical analysis via a case-based approach to learning. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6241 - Marketing Strategy (1.5 Credits)

This course focuses on applying the fundamentals of marketing theory in real-world settings. Guest-speakers, company site visits, and developing a marketing plan are used to emphasize marketing principles. The distinction between small-business-oriented lean marketing and large-scale marketing effort of corporations will be drawn out thru the course experience. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6250 - Information Systems Strategy Foundations (1.5 Credits)

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. This course examines strategic issues involved with the effective management of information technology (IT) in businesses including the role of digital technologies as a driver of business innovation and strategy. The development and management of an effective digital infrastructures are discussed. A broad overview of how systems support operational, administrative, compliance and security needs while fulfilling strategic objectives is covered. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6251 - Data Management Strategy (1.5 Credits)

This course provides students with an overview of the key concepts for establishing an organizations data management strategy, ensuring that its operational and analytical needs are efficiently and effectively addressed. Real-case scenarios that companies face when addressing global operational and analytical data challenges are emphasized. The course also addresses current trends in managing structured data as organizations move to cloud-based computing services. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6260 - Applied Microeconomics (1.5 Credits)

This course provides an overview of “thinking like an economist”. The course covers an introduction to supply and demand and the basic forces that determine an equilibrium in a market economy. Students learn to understand: consumer behavior, firm behavior, and analyze different types of market structures (monopoly, oligopoly and a competitive market). Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6261 - Applied Macroeconomics (1.5 Credits)

This course explores the causes and effects of unemployment, interest rates, and inflation. The roles of the central bank and the government in implementing policy are discussed. The course provides models of macroeconomics will be introduced and illustrated using historical US data. The course prepares a student to take intermediate macroeconomics. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6270 - Operations Management (1.5 Credits)

This course is concerned with sales and operations planning through coordination of resource planning, inventory control, logistics management, network configurations, demand management and work flow efficiencies with an operations strategy perspective. Computer-based operations analytics to support decision making is emphasized. Current innovations and future trends in operations are included. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6271 - Supply Chain Management (1.5 Credits)

This course is concerned with the design, analysis, management and control of supply chains. Because of advances in globalizations, sustainability and technology, course emphasis includes integration of processes and systems, relationship management of upstream and downstream players, configuration of network designs and evaluation of strategies that incorporate current and future trends. Computer-based analytics and the Supply Chain Operations Reference (SCOR) model are addressed. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6280 - Finance Management I (1.5 Credits)

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6281 - Finance Management II (1.5 Credits)

This two-part course deals with decisions a business firm takes to maximize stakeholder value. Students learn to use theories and techniques to examine and understand business and security valuation, the cost of capital, capital budgeting and capital structure, and other related issues. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6290 - Strategy Foundations (1.5 Credits)

This course is a graduate level introduction to the topic of strategic management – definitions, core ideas, and a broad understanding of what is required for the firm to build a competitive advantage that is sustainable over the medium to long term. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6291 - Strategy in Practice (1.5 Credits)

The capstone of the MBA and a deeper dive into strategic management - covering the essential tools used to formulate a firm's strategy, but also building on the core functional area courses to tackle strategy in practice via an in-depth, group-based, simulation. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6301 - Global Business (1.5 Credits)

This course examines the dynamic context of global business from both a multinational and entrepreneurial perspective. Topics covered include the cultural, political-legal, technological, economic, financial, and sustainability aspects of the international business environment. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6310 - International Business Abroad (3 Credits)

The One Year MBA International Business Study Abroad is an experiential learning course conducted abroad. Available for One Year MBA students. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 3.0 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6320 - Career and Professional Development (0.5-1 Credits)

This course focuses on preparing students to successfully seek their next position and develop the professional skills to excel in their long-term career. Sample topics include: Personal Brand Readiness; Business Communication Skills; Business Professionalism; and Interview Skills. Restrictions: Restricted to graduate majors within the Business School with the AMBA major code. Repeatable. Max Hours: 1.5 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 1.5.

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6330 - Introduction to Business Consulting for MBAs (1.5 Credits)

This course is designed to prepare students to effectively engage with clients by exposing them to a broad business-consulting knowledge base. This course includes case analyses, guest speakers, and other preparatory content for real-world projects. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6401 - Negotiations (1.5 Credits)

This course is designed to give students hands on experience developing critical career or professional skills, with a specific focus on negotiation and bargaining effectiveness. Through simulations, role-playing cases, and personal experience, students practice and hone their negotiation skills, gain insight into interpersonal influence and communication, and learn how they are perceived by others. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6410 - Investments (1.5 Credits)

This course provides students with a broad understanding of financial theory, financial markets and products, and analytical tools and techniques needed for investment decision making. Topics include portfolio theory, equilibrium models of asset pricing, equity valuation and option fundamentals. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6420 - Visual Analytics for Big Data (1.5 Credits)

This course deals with the core concepts and skills behind big data for business applications, such as SQL for data extraction, data cleaning and processing, RStudio and SAS for modeling, and Tableau and Power BI for data visualization and PowerPoint for presentations. Detailed business applications integrating the concepts and skills are demonstrated.

Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits

Grading Basis: Letter Grade

Restricted to graduate majors within the Business School with the AMBA major code.

AMBA 6430 - Digital Marketing Strategies (1.5 Credits)

The marketing of services which constitutes 80% of the US economy is changing very rapidly. This course uses cases and speakers to examine how service-oriented organizations make effective transformations from traditional to digital marketing strategies. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6440 - Conflict Management (1.5 Credits)

Using negotiation principles as a foundation, students gain hands on experience developing critical [alt: career or professional] management skills, with a focus on conflict management, group consensus-building, managing cultural differences, and minimizing decision biases. Through simulations, role-playing cases, and personal experience, students practice and hone their skills and give and receive performance feedback to others. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6450 - Advanced Corporate Finance (1.5 Credits)

This course extends the basic principles of corporate finance to an advanced level to provide an intuitive and adequate framework for making financial decisions. The course deals with topics such as agency problem, valuation, and capital structure decision. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6460 - Digital Marketing Analytics (1.5 Credits)

This course is designed to provide you with an overview of the ever-changing digital marketplace while also equipping you with hands-on experiences and analytical skills that you will need to perform vital functions in various areas of digital marketing. By the end of the course, you will be able to walk into any company with an online presence and improve their use of the digital media. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credit Hours.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6470 - Applied Business Consulting (1.5 Credits)

This course provides students who have completed AMBA6330 (Introduction to Business Consulting for MBAs) the opportunity to apply their learning to a real-world business-consulting project. Students will scout, scope, consult and present on a project with a company of their choosing. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max Hours: 1.5 Credits

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6480 - Creating an Ethical Business Culture (1.5 Credits)

Ethical decision making is covered, including spotting and addressing red flags fostering unethical behavior. Governance and stakeholder management techniques are highlighted while applying the ethical principles of integrity, trust, accountability, transparency, fairness, respect, viability, and the rule of law. Restriction: Restricted to graduate students in the One Year MBA program. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restricted to graduate majors within the Business School with the AMBA major code.

AMBA 6490 - One Year MBA Practicum (5 Credits)

The One Year MBA Practicum course trains students in real-world applications. In the Practicum, students, under the direction of faculty, address a real-world problem. Restriction: Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 5 Credits.

Grading Basis: Pass/Fail Only

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6510 - Personal Branding (1.5 Credits)

This class is designed to show how to create successful personal brand strategies for professional and personal development in both Entrepreneurial and Intrapreneurial environments. The course work will leverage the innovative lean start-up methodology to develop effective strategic planning for each student's personal brand. The coursework will consist of case studies, projects, guest speakers, videos, podcasts, and reading materials. Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restricted to graduate majors within the Business School with the AMBA major code.

AMBA 6520 - Managerial Accounting Seminar (1.5 Credits)

This course emphasizes how cost management and management control systems can be used in setting and executing organizational strategy and in making tactical decisions. Behavioral and quantitative approaches regarding information for decision making, planning, control, performance evaluation and other issues are investigated. Course readings, case studies and discussion will highlight key concepts and issues. This course is reserved for students in the One Year MBA program. For more information, please contact the program at 303-315-8800. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6530 - Creating Digital Businesses (1.5 Credits)

Companies across the front range are using technology to attack exiting industries. Meet some of the entrepreneurs who are creating Colorado's newest and most valuable companies. Then try your hand at a final project incorporating their lessons and readings in this highly interactive course. This course is reserved for students in the One Year MBA program. For more information, please contact the program at 303-315-8800. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6540 - Global Business in Practice (1.5 Credits)

This course allows students to learn practical tools for doing business abroad across functional areas. Students will gain exposure to real-world and case-based learning. Restriction: This course is reserved for students in the One Year MBA program only. For more information, please contact the program at 303-315-8800. Max hours: 1.5 Credits

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6550 - Consulting in Practice (1.5 Credits)

This course relies on skills learned in AMBA 6330 to engage in real-world consulting. Short-term, team-based projects are scoped by faculty for completion during this course. Restriction: This course is reserved for graduate students in the One Year MBA program. For more information, please contact the program at 303-315-8800. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6560 - Executive Briefings (1.5 Credits)

Students interact and learn directly from executives from a wide variety of organizations, with a particular emphasis on leadership. The course is highly interactive, with students gaining insight that will further their own leadership agendas. Restriction: Restricted to AMBA majors within the Business School. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 1.5.

Restrictions: Restricted to AMBA majors within the Business School.

AMBA 6800 - Special Topics (1.5 Credits)

Courses offered irregularly for the purpose of presenting new subject matter in business. Consult the current 'Schedule Planner' for semester offerings. Restricted to graduate majors within the Business School with the AMBA major code. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Restricted to graduate majors within the Business School with the AMBA major code.

AMBA 6840 - Independent Study (1-3 Credits)

Independent study. Limited to OYMBA students only. Allowed only under special and unusual circumstances. Permission of Program Director required. Prereq: Limited to OYMBA students only. Allowed only under special and unusual circumstances. Permission of Program Director required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

Criminal Justice (CRJU)

CRJU 5001 - Criminal Justice Systems, Policies, and Practice (3 Credits)

Examines current critical issues in the justice system affecting law enforcement, courts, corrections, and recent social developments related to personnel. The development, implementation, and analysis of public policy in the field of criminology are explored in depth. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5002 - Criminological Theory (3 Credits)

Explores the origins of criminal behavior and impact of crime on society. Theories of deviant, delinquent, and criminal behavior are examined, and practical implications and application of theoretical constructs are analyzed through current research paradigms and empirical research. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5003 - Research Methods (3 Credits)

Examines applied research designs and analytical models. Research problems in the system are utilized to illustrate the application and interpretation of alternative research strategies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5004 - Statistics for Criminal Justice (3 Credits)

Introduces principles of descriptive and inferential statistics and provides tools for understanding research findings. Topics include hypothesis testing and point estimation; bivariate and multivariate measures of association; inferential statistics; ordinary least square regressions, logistic regression analyses. Prereq: CRJU 5003 with a B- or better.

Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CRJU 5003 with a B- or better. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5005 - Law & Society (3 Credits)

Introduces a variety of topics related to the functions and societal implications of law. The course focuses on social/ legal theory and analyzes law and legal institutions from a critical perspective. Materials provide content on how to evaluate law and legal institutions, especially in relation to equality, justice, and fairness. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Typically Offered: Fall, Spring.

CRJU 5010 - Seminar Nonprofit Management (3 Credits)

Provides an overview of principles and concepts unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students also are introduced to the history and importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and 5110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5015 - Intelligence Writing and Briefing (3 Credits)

This course provides an overview of intelligence analysis and aims to provide the skills and tools necessary to effectively communicate results to consumers. Students will be familiarized with the analytical, perceptual, and cognitive pitfalls of conducting intelligence analysis and learn a variety of strategies for overcoming these problems, preparing professional intelligence products, and presenting executive-level intelligence briefings. Cross-listed with CRJU 4015. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5100 - Administration of Criminal Justice (3 Credits)

Analyzes the policies and practices of agencies involved in the criminal justice process, from the detection of crime and arrest of suspects through prosecution, adjudication, sentencing and imprisonment, to release. The patterns of decisions and practices are reviewed in the context of a systems approach. Cross-listed with CRJU 7100 and CRJU 4100. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5140 - Nonprofit Financial Management (3 Credits)

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Cross-listed with PUAD 4140 and 5140. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5150 - Domestic Violence and Crime (3 Credits)

This course examines the criminal justice systems response to intimate partner violence by focusing on the interactions between victims, offenders and the individual components of the criminal justice system. By exploring the dynamics of intimate partner violence this course addresses the theory, history, research, legislation and policy implications related to the criminal justice system's response to violence against women. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5200 - Wrongful Convictions (3 Credits)

Explores the continuum of justice-system errors ranging from persons who are falsely accused (arrested, prosecuted, and tried) to those who are wrongly convicted and imprisoned or sentenced to death row and erroneously executed. Cross-listed with CRJU 4200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5210 - Prisoner Reentry (3 Credits)

Focuses on prisoner reentry, including strategies to prepare inmates for release, reduce recidivism, and facilitate adjustment in the community while meeting the demands of public safety. Cross-listed with CRJU 4210. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5220 - The American Jury System (3 Credits)

Examines historical and current issues in jury decision making and dynamics. The course explores issues such as jury size, eyewitness testimony, and jury reform. Court decisions are examined as a comprehensive understanding of jurors and their role. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5240 - Gang Patterns and Policies (3 Credits)

Focuses on gangs, gang members, and gang activity in the United States. Topics include the origins and historical development of gangs, gang migration, gang related crime and violence, gang victimization, and the effects of gang involvement on communities and families. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5250 - Criminal Offenders (3 Credits)

Introduces the core principles and tools of motivational interviewing as it is used currently with the offender population. Students learn how to utilize these skills working with specific offender populations and how to motivate these often resistive clients to change their thinking patterns and behaviors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5260 - Crime and Literature (3 Credits)

This seminar focuses on nonfiction literature as it relates to criminality and the criminal justice system. Samples of social commentary, biographies/autobiographies, and other accounts presented within various types of nonfiction literature are examined in order to more fully understand and appreciate their impact in shaping public opinion of the criminal justice system. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5270 - Case Studies in Criminal Justice (3 Credits)

This seminar examines the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies that utilize observation, participant observations, and interviews as their primary research methodology are assigned in order to develop a critical understanding of the social marginalization and cultural aspects of the lives of real human beings living constantly on the edge of the law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5280 - Computer Crime (3 Credits)

The course is designed to enhance interest, experience and knowledge in leadership that promotes professionalism and ethical behavior. Individual and organizational dynamics are explored through a critical perspective, focusing on criminal justice roles and responsibilities. The class teaches effective leadership skills in areas such as team building, strategic planning, and decision making. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 7280. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5285 - Trauma in the Criminal Justice System (3 Credits)

This course examines trauma as widely prevalent among those who are served by the criminal justice system and experienced disproportionately among criminal justice professionals. Trauma prevalence, theory, prevention, and interventions through a trauma stewardship lens for victims of multiple forms of trauma, including vicarious traumatization and secondary traumatic stress, will be emphasized through an all-inclusive view across the criminal justice continuum. Cross-listed with CRJU 3285. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5290 - Capital Punishment (3 Credits)

This course examines in-depth a comprehensive range of issues surrounding capital punishment. Specifically, it looks at the history of capital punishment, methods of execution, legal issues and case law, deterrence, miscarriages of justice, discrimination in the capital charging and sentencing system, and the role of the death penalty internationally. The coverage of these issues relies on many sources, including scholarly readings, non-fiction books, court cases, websites, videos and documentaries, speeches, and media. Cross-listed with CRJU 3290. Max hours: 3 Credits.

Grading Basis: Letter Grade

CRJU 5301 - Crime and the Media (3 Credits)

Surveys the relationship between mass media and the U.S. criminal justice system. Special attention is given to the role of media in the social construction of reality. Emphasis is placed on the application of social constructionism to criminal justice related social problems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5320 - Police Administration (3 Credits)

Considers the major issues confronting police executives, such as professionalism, recruitment, selection, training, deployment, innovation, evaluation, and charges of brutality, inefficiency, and corruption. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5325 - Qualitative Methods for Criminal Justice (3 Credits)

Focuses on qualitative methods applicable to research in the field of criminal justice. The primary focus is on ethnographic approaches employing such fieldwork techniques as observation, participant observation, interviews, content analysis, life histories and case studies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5331 - Crime Analysis and GIS (3 Credits)

Serves as an introduction to the uses and applications of analysis within law enforcement, including the role of analysis in law enforcement, theories that guide analysis and police practices, commonly used data sources and technology, and techniques for various types of analysis utilized in law enforcement. Cross-listed with CRJU 4331. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: "B" or better in CRJU 5003 and 5004

CRJU 5361 - Capstone Seminar (3 Credits)

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of faculty and criminal justice professionals. Prereq: CRJU 5000, CRJU 5100, CRJU 5120, CRJU 5321. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: CRJU 5001 or 5100, 5002 or 5120, 5003 or 5321, 5004 or 5000 and 5005

Additional Information: Report as Full Time.

CRJU 5391 - Sex Offenders and Offenses (3 Credits)

Focuses on challenges practitioners face in managing sex offenders, including the development of programs and partnerships that can effectively assess, track, control, and treat sex offenders through all phases of the system. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5410 - Victimology (3 Credits)

Examines victim-offender relationships, interactions between victims and the criminal justice system, and connections between victims and other social groups and institutions among various populations. The course addresses the theory, history, research, legislation and policy implications related to the social construction of "the victim." Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5420 - Violence in Society (3 Credits)

This course examines various aspects of violence, including distribution over time and space; situations and circumstances associated with violent victimization and offending; and how social institutions, community structure, and cultural factors shape violent events. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5430 - Drugs, Alcohol, and Crime (3 Credits)

This course provides an interdisciplinary overview of theory, research and policy issues surrounding the relationship between drugs, alcohol and crime, and responses of the criminal justice system. Special attention is paid to the socially constructed nature of illegal substances and connections with U.S. drug policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5510 - Contemporary Issues in Law Enforcement (3 Credits)

Examines current thinking and experience with respect to changing and reforming police programs and practices. The course focuses primarily on the American police experience, reviewing major innovations, exploring their rationale, and examining organizational impediments to their implementation. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5520 - Corrections (3 Credits)

Examines the development and implementation of correctional systems in America. Topics include the origins of correctional efforts and the evolution of the prison system, punishment and rehabilitation rationales in the context of sentencing models, the social organization of the prison, including inmate subcultures and staff work strategies, and the inmates' rights movement and the impact of judicial intervention in correctional settings. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5530 - Community Corrections (3 Credits)

Analyzes theories and practices of probation and parole, responses of paroling authorities to public pressures and court controls, and their implications for rehabilitation. Efforts to bridge institutional settings and community life, as well as the feasibility and effectiveness of treating individuals under sentence in the community, are reviewed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5540 - Juvenile Justice (3 Credits)

Examines policies and practices of agencies in processing youthful offenders through the juvenile court system, reviews trends in juvenile justice policymaking, and assesses changes in response to juvenile crime by both the juvenile justice and criminal justice systems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5550 - Criminal Justice Policy and Planning (3 Credits)

Provides a survey of conceptual and design strategies in criminal justice policy analysis. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected policy issues in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5551 - Courts, Law & Justice (3 Credits)

Analyzes judicial organization, court administration, and criminal court judicial decision making practices within the context of the broader operation of the criminal justice system. Special attention is paid to the social organization of the courtroom, examining the special roles of judges, prosecutors, and defense attorneys. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5552 - Criminal Justice Ethics (3 Credits)

Offers a normative framework within which to explore ways to increase sensitivity to the demands of ethical behavior among criminal justice personnel. The application of a normative perspective enhances the possibility that moral problems are better understood, more carefully analyzed, and rendered more tractable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5553 - Women, Crime, and Justice (3 Credits)

Explores issues surrounding women as offenders, victims, and criminal justice professionals. Investigates explanations for the involvement of women in illegal activities. Analyzes the plight of battered women, rape victims, and other female victims. Examines the participation of women in law enforcement judicial processes, corrections, and lawmaking. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5555 - Profiling Criminal Behavior (3 Credits)

Examines the dynamics of individual criminal acts utilizing inductive and deductive methodology to profile criminal behavior, offender characteristics, crime scene investigation, evidence collection, and case linkage of specific categories of crimes. Topics include homicide, serial crime, stalking. Max hours: 3 Credits.

Grading Basis: Letter Grade

CRJU 5571 - The Social Organization of Crime (3 Credits)

Explores the relationship between neighborhood social disorganization and crime from a social ecology perspective. The course examines the underlying social causes of phenomena such as criminal victimization, violent and property crime, neighborhood fear, neighborhood deterioration, and recidivism. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5572 - Race, Crime, and Justice (3 Credits)

Examines the influence of race in the administration of justice. Special attention is paid to the policy implications of racial disparities in the criminal justice system. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5574 - White Collar Crime (3 Credits)

Employs social science and legal approaches to examine crime committed by corporations as well as by individuals in white-collar occupations. Topics include how such crimes are socially defined, who commits them, which social contexts promote them, who is victimized, and how society and the criminal justice system respond. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 3160. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5575 - Offenders With Mental Health Disorders (3 Credits)

Examines the offender who may be mentally disordered. Special attention is paid to the various phases of the criminal justice system where psychiatrists are involved (e.g., diversion, fitness, insanity and sentencing), dangerous sex offender legislation, "not guilty by reason of insanity" and "guilty but mentally ill" statutes, and issues concerning confidentiality, informed consent, and treatment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 7575 and 3575. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5576 - Social Science in the Criminal Justice System (3 Credits)

Examines the use of social science as a tool for legal analysis within the criminal justice system. The course examines how social science research is used to resolve relatively simple factual disputes, then moves on to more complex issues that arise when social science is invoked to make or change law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5644 - Environmental and Hazards Law (3 Credits)

This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5644. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5650 - Public Service in Emergency Management and Homeland Security (3 Credits)

Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, PUAD 5650, and CRJU 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5655 - Principles of Emergency Management (3 Credits)

Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5655, PUAD 4012, and CRJU 4012. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5710 - Environmental Crime and Justice (3 Credits)

Environmental Crime and Justice will look at the disproportionate benefits and burdens of environmental "profits" (e.g., open spaces, clean air and water, etc.) and contamination (which results from behaviors that include, but are not limited to crime), as well as the implications of these disparities on certain areas, particularly communities of color and indigenous communities. The role of the government, the private sector, non-profit organizations, and the environmental justice movement in creating, perpetuating, and minimizing environmental crime and its disparities will be examined, with part of the focus being on theories within critical criminology that address issues of environmental crime injustices. The nature of environmental offenders and victims will be explored. Policies and programs that have been organized to address environmental crime and other injustices and their effects (e.g., quality of life, birth defects, childhood asthma, lead poisoning, cancer, etc.) will be reviewed, including responses by the criminal justice system to environmental crime. Students will examine critically the consistencies and inconsistencies in institutionalized mechanisms that are set up, either intentionally or more subtly, to create, reinforce, or minimize environmental crimes and injustices. Cross-listed with CRJU 4710.

Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

CRJU 5720 - Public Policies for Hazards and Disasters (3 Credits)

Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5720. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5910 - Nature and Scope of Interpersonal Violence (3 Credits)

Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5910. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5920 - The Psychology of Interpersonal Violence (3 Credits)

Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5920. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5930 - Interpersonal Violence Law and Public Policy (3 Credits)

Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5930. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change (3 Credits)

Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 5940. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6171 - Homicide Studies (3 Credits)

This class examines criminal homicide from all angles: the offenders, the victims, the police, prosecution, defense, jurors, and judges. It looks at investigative techniques and the latest science involved in criminal investigation, jury selection, and other criminal justice system issues. It focuses on what is arguably the most serious form of homicide, murder, exploring sensational cases that involve delving into the psyche of murderers. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6600 - Special Topics in Criminal Justice (3 Credits)

Specialized seminar intended to provide students and faculty with the opportunity to explore significant themes, issues, and problems in the field of criminal justice. Topics vary from semester to semester. Course may be taken for credit more than once, provided subject matter is not repeated. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6840 - Independent Study: CRJU (1-3 Credits)

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the MCJ degree. MCJ Prereq: 12 semester hours of criminal justice course work and permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6910 - Internship in Criminal Justice (3 Credits)

For students who have not had practitioner experience, a full- or part-time internship is required. Note: Masters students must have completed a minimum of 18 credit hours at the graduate level to take this course. Dual Degree students must have completed a minimum of 6 credit hours at the graduate level. Minimum cumulative GPA of 3.0 required to take this course. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 6950 - Master's Thesis (3-6 Credits)

Independent original research project supervised and evaluated by a thesis committee. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

CRJU 8840 - Independent Study (1-3 Credits)

Affords the student the opportunity to pursue creative research activities under the individual supervision of a full-time faculty member. No more than six semester hours of credit for independent study may be applied toward the PhD degree. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

CRJU 8990 - Doctoral Dissertation (1-10 Credits)

Upon admittance to candidacy, students must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 7.0 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the PhD director to register for only 3.0 credit hours to maintain continuous enrollment. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

Culturally and Linguistically Diverse Education (CLDE)

CLDE 5000 - CLDE Portfolio Bridge (3 Credits)

Class participants review CLDE content from previous teacher license classes, fill in gaps in knowledge related to CLDE teacher preparation standards, and compile a portfolio which shows their proficiency in the CLDE standards. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5001 - Content Bridge in Culturally and Linguistically Diverse Education (3 Credits)

This class includes four investigations that address challenging problems in Culturally & Linguistically Diverse Education. Participants complete guided activities and independent research to create a solution or approach to the problems. The four assignments apply to the CLDE endorsement portfolio. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5010 - Foundations of Language & Culture in Education (3 Credits)

Designed for veteran and novice teachers to gain an understanding of schooling and language education. Participants examine key social theories based on the writings of important scholars in the field, on topics such as the politics of race, schooling, language, and cultural identity. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5020 - Responsive Classroom Communities (3 Credits)

This course investigates how people learn and the implications of social and cultural learning for establishing engaging and culturally responsive learning communities. Through this course teacher candidates will better understand their roles in student learning and how their own cultural lenses impact their relationships with students and families, and influence student success in the classroom. Cross-listed with CLDE 4020. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5030 - Language Development of Multilingual Learners: Advanced (3 Credits)

This course offers a deep investigation of the relationship between language and literacy acquisition. In the context of first and second language development across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5032 - English Linguistic Foundations for SLA & TESOL (3 Credits)

Investigates Second Language Acquisition (SLA) theories and new developments in the field relevant to adult learners of English, factors that influence outcomes, and key structures in English grammar and pronunciation. Lab time with ESL learners involves teaching listening/speaking and applying grammar in writing. Max hour: 3 Credits.

Grading Basis: Letter Grade

CLDE 5035 - Connecting Multilingual Theories to Practice (3 Credits)

This course supports students in synthesizing research and theory on learning and multilingual development, and identifying their own theoretical orientation in the field. There is a specific emphasis on connecting classroom practice to their theoretical stance. Prereq: CLDE 5010, CLDE 5160, CLDE 5050, CLDE 5070, CLDE 5820, and CLDE 5825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: CLDE 5010, 5160, 5050, 5070, 5820, and 5825.

CLDE 5040 - Social Justice Liberation: A Rehearsal for the Revolution (3 Credits)

We will explore TO and CRT. Students will engage in class discussions, theatre workshops, and critically analyze the applicability of these concepts to education and community work through deep and thorough engagement of readings, TO activities, and discussions about school and community activism with peers and the greater community. Cross-listed with CLDE 7040. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5042 - Techniques for Teaching Adult ESL (3 Credits)

This course provides principles of language assessment and progress monitoring strategies for teachers of adult ESL learners to help inform their practices and decisions related to appropriate instruction and placement of, and programming for, learners. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5050 - Assessment & Advocacy for Multilingual Learners (3 Credits)

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students. Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with SPED 5050. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5070 - Linguistic Analysis of English (3 Credits)

A descriptive linguistic approach to English grammar with a functionalist view of language and discourse processing. The course examines the historical evolution of English from its origins and the impact this has had on its grammar and syntax. A critical applied linguistic perspective is included focusing on language variation and status. Provides a framework for understanding, identifying and describing the major features of English (in particular) and language (in general). Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5140 - Language, Culture & Educational Equity (3 Credits)

Develops an understanding of the pluralistic and intersectional nature of U.S. society (race, class, gender, sexuality, language, migration status), and the role of the school within this social context. Examines the legal and cultural history of language education in Colorado and the U.S. as well as the impact of changing demographics on schools. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5160 - History & Law of Bilingual & Immigrant Education (3 Credits)

This course includes an overview of U.S. and Colorado history and legislation related to bilingual education and second language education, as well as current and historical immigration issues as they impact students, families, communities, schools, and educators. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5170 - Race, Class and Culture in Public Schools (3 Credits)

This course will focus on understanding culture and diversity, recognizing the role of inherited power and privilege in both individual and institutional interactions and developing a philosophy of social justice and equity in education. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5190 - Culturally Responsive Pedagogy and Practices (3 Credits)

This course focuses on developing practical tools for culturally responsive, inclusive instructional strategies, classroom management and curriculum and lesson planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5430 - Gender as Culture (3 Credits)

Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 7430. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5680 - Spanish for Educators (3 Credits)

This course is designed to help teacher candidates advance their Spanish skills. Teacher candidates will clarify their motivations and purposes for studying Spanish and gain a greater understanding of language assessments and of their own Spanish abilities and increase insight and empathy for emergent bilingual students. Cross-listed with CLDE 3680. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5700 - Social Studies for Multilingual Learners (3 Credits)

Participants will use a social justice lens to investigate the content and language demands of the four disciplines of social studies: History, Civics, Geography and Economics. This class focuses on Social Studies methods as well as essential practices for teaching multilingual students. Cross-listed with CLDE 4700. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5800 - Language Variation & Implications for Teaching (3 Credits)

Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed. Cross-listed with CLDE 7800. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5810 - Literacy for Bilingual Learners offered for Student Teacher Residency (STR) (3 Credits)

This course, for residents in the STR program, highlights the best practices for language and literacy development for culturally and linguistically diverse learners, including bilinguals, multilinguals, and speakers of non-standard varieties of English. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5820 - Teaching Multilingual Learners, Advanced (3 Credits)

This course focuses on the hands-on practical application of methods and techniques that support language, academic and identity development for bilingual learners. Course work includes critical perspectives on teaching techniques, investigations into the research on teaching techniques in multilingual education, as well as an emphasis on teachers taking leadership in the field of CLDE. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5824 - Theories and Methods of Bilingual Education (3 Credits)

Taught in Spanish, this course explores theories and methods of effective instruction of Spanish-English bilingual children. The course addresses theories of bilingualism and bilingual language/literacy development as well as methods for teaching in bilingual classrooms. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5825 - Methods of Content Teaching for Bilingual Learners (3 Credits)

Provides an in-depth study of curriculum options for learners developing English in schools. Participants examine and apply strategies and materials for developing linguistic and academic capabilities of language learners, with optional extensions for bilingual program educators. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5827 - Developing Content Teaching Methods for Bilingual Learners through PLC (3 Credits)

Through this flexible start course, students will synthesize the professional development work done through district offered e-workshops, and relate it to the literature on best practices for culturally and linguistically diverse classrooms. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5828 - Practitioner Inquiry into the Role of Language in Teaching (3 Credits)

Participants will synthesize work done through eworkshops, and connect this practical professional development work to important scholarship in the broader field of education research, examining role of language, culture, and identity in teaching and learning. Max Hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5830 - STR Culminating Experience (3 Credits)

This class provides support for students in the CLDE district-based teacher residency. Students create summaries of their year-long learning and reflect upon artifacts that show their learning in relation to the state standards in Culturally and Linguistically Diverse Education. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5835 - Special Topics: Culturally and Linguistically Diverse Education (0.5-3 Credits)

Advanced study of special topics that examine multilingualism, cultural pluralism, and community in Culturally and Linguistically Diverse Education. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

CLDE 5840 - Independent Study: CLDE (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

CLDE 5850 - Culminating Experience: Bilingual Specialist (1 Credit)

In this capstone, students compose a 3-5 minute video, plus provide artifacts from teaching and coursework with explanations of how these artifacts show mastery of CDE Standards 8.23 for Bilingual Education Specialist competencies. Prereq: Completion of CLDE endorsement AND 9 units in Bilingual Specialist pathway CLDE 5824, SPAN 5020, SPAN 5060, SPAN 5076, SPAN 5080, SPAN 5099, and 5980. Max hours: 1 Credit.

Grading Basis: Pass/Fail Only

Prereq: Completion of CLDE endorsement (CLDE 5010, CLDE 5160, CLDE 5070, CLDE 5030, CLDE 5820, CLDE 5050, CLDE 5825, CLDE 6912) AND 9 units in Bilingual Specialist pathway (CLDE 5824, SPAN 5020, SPAN 5060, SPAN 5076, SPAN 5080, SPAN 5099, and 5980).

CLDE 5910 - Improving Student Outcomes: Interdisciplinary Inquiry (3 Credits)

This course operates from three distinct disciplinary perspectives: urban planning (community and schools), education (quality teaching), and public policy (accountability). Students explore important factors related to improving K-12 student outcomes: resources, leadership, teaching and parent/community involvement from three disciplinary perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 5920 - Immigration through Children's Literature (3 Credits)

This class explores themes of immigration and multilingualism by examining children's and young adult literature. Combines techniques for teaching literacy in multilingual environments with foundational themes in the study of immigration and multilingualism. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 6910 - Leadership Practicum in CLDE (3 Credits)

This practicum course grants credit for field significant experiences, connected to the program of study and the Colorado standards for endorsement. Teachers who can engage in, synthesize, and reflect on these experiences are eligible for this course credit. Max hours: 3 Credits.

Grading Basis: Pass/Fail with IP

CLDE 6912 - Teacher Inquiry in Multilingual Classrooms (3 Credits)

This seminar provides opportunities for advanced students in the M.A. program to apply an inquiry lens to the concepts of CLDE. Students design an inquiry project, where they focus on a problem of practice, create an action research question, collect student work as data, and analyze findings and results. Students work in research teams, providing feedback and observing each other's classrooms. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 6950 - Master's Thesis (4 Credits)

This class provides the opportunity for CLDE MA students to complete a Masters' thesis in place of the CLDE Culminating Experience. This class is open to students with advisor support and approval. Max hours: 4 credits

Grading Basis: Letter Grade

Additional Information: Report as Full Time.

CLDE 7040 - Social Justice Liberation: A Rehearsal for the Revolution (3 Credits)

We will explore TO and CRT. Students will engage in class discussions, theatre workshops, and critically analyze the applicability of these concepts to education and community work through deep and thorough engagement of readings, TO activities, and discussions about school and community activism with peers and the greater community. Cross-listed with CLDE 5040. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7090 - Research Seminar (3 Credits)

An advanced course which focuses on specific issues in language, language acquisition and language teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7210 - Introduction to Leadership for Latin@ Learners (1 Credit)

In this introductory module, students will move beyond typical discussions of leadership that are neutral with regards to the students and families being served to one that puts linguistic and cultural diversity at the center of the discussion. Students will first survey the current state of Latin@s in education and communities from a local and national perspective. We will then co-construct a set of broad questions and examine theoretical frameworks that set the stage for the remaining courses in the program. Max hours: 1 Credit.

Grading Basis: Letter Grade

CLDE 7220 - Legal And Policy Foundations For Latin@ Students (2 Credits)

This course is a comprehensive survey of the highlights and lowlights of federal, state, and local history, legislation and policy regarding the education and rights to education and language for Latin@ students. The readings and discussion are around various ideologies, philosophies, and theoretical underpinnings of education. In this class you will develop skills in critical consideration of the rights of all in US society and the responsibilities of the public institution of schools. As the performance assessment for this course you will have an opportunity to focus on a Colorado school district, community or community organization of your choosing. You will outline history, legislation, and policy for that site. Max hours: 2 Credits.

Grading Basis: Letter Grade

CLDE 7230 - Language and Literacy in Bilingual Learners (3 Credits)

This course focuses on first and second language acquisition, and its impact on literacy in young children, elementary and secondary students, and students with special needs. Topics are literacy and language development, assessment, culturally responsive teaching, and school reform policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7250 - Systems, Policy, and Advocacy in Latin@ Communities (2 Credits)

This hybrid, 2-credit module introduces participants to methods of policy research and analysis across levels (federal, state, local) and the historical contexts behind key policies. Participants apply studied forms of policy analysis to investigate and engage with policies affecting their communities. Max hours: 2 Credits.

Grading Basis: Letter Grade

CLDE 7260 - Synthesizing Research in Latin@ Learners and Community (1 Credit)

In this final module, students will revisit the theoretical frameworks and research questions they have examined throughout their coursework and: a) identify a problem of practice and research questions they wish to explore in greater depth; b) identify theoretical framework(s) that will guide your research; and, d) develop a comprehensive literature review. Max hours: 1 Credit.

Grading Basis: Letter Grade

CLDE 7310 - Critical Race Theory: History, Theory, and Application (3 Credits)

Students will gain knowledge of Critical Race Theory and its early origins. Key themes to be explored include interest convergence, intersectionality, revisionist history, critiques of Liberalism, and critiques of CRT. Students also explore methodological issues and the potential applicability of CRT to their own research. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7320 - (Re)Claiming Dominant Narratives: History, Education, & Activism in Latinx (3 Credits)

Students will review a condensed history of Latinx peoples in America. Working with civil rights activists, scholars, and local community members, students will utilize decolonized methodologies to conduct a community story preservation project to reclaim the dominant narrative of local movements. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7410 - Communication & Control: Systemic Change (3 Credits)

Examines educational settings – classrooms, schools, school districts, corporate and clinical settings, church basements and community centers – as systems, and explores strategies for change. Participants draw on interdisciplinary perspectives of individual and group behavior as they develop personal theories of change and apply these to their own situations. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7430 - Gender as Culture (3 Credits)

Examines ways some implicit conceptual and value systems regarding gender are manifested in schools, homes and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society. Cross-listed with CLDE 5430. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7713 - Introduction to Language Policy (3 Credits)

The legal, ideological, and historic foundations of language policies are examined. Also examined are connections with related topics such as language rights, language and power, and issues from the sociology of language, such as language loyalty. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7800 - Language Variation & Implications for Teaching (3 Credits)

Provides an introduction to the field of educational sociolinguistics and research of classroom discourse. Students are introduced to the collection and analysis of oral and written language in educational contexts. Basic concepts and key issues regarding the form-function relationships of language use in instructional settings are discussed.

Cross-listed with CLDE 5800. Max hours: 3 Credits.

Grading Basis: Letter Grade

CLDE 7840 - Independent Study: CLDE (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Decision Sciences For Business (DSCI)

DSCI 6440 - Quality and Process Improvement (3 Credits)

Studies the identification, measurement and improvement of quality and the practical management issues related to implementing quality systems within organizations. Topics include historic and contemporary views of quality, statistical quality control tools including Six SigmaSM, work design and measurement and process flow and design. Prereq: BUSN 6530 with a grade of "C" or better. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6530 with a grade of "C" or better Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

DSCI 6822 - Services Operations (3 Credits)

Examines the unique issues involved in the management of service operations. Operations management principles specific to service industries are given in-depth. In addition, simulation is introduced as a technique for studying service industries. Prereq: BUSN 6530 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Design & Planning (DSPL)

DSPL 7011 - Research Design (3 Credits)

Students are provided with a 'hands on' understanding of methodological issues to become both intelligent consumers of social science research and competent producers of empirically based knowledge. The course moves through the research process covering hypothesis formulation, research design, data collection, measurement, and some fundamentals of statistical inference. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7012 - Theories of Planning (3 Credits)

Examines theories of planning and problems of plan implementation. Review and assesses a range of theories of intervention - market imperfections, political economy, regulations, community, rationality, and communication - relying on examples from students research as well as case studies developed by students. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7013 - Environment and Behavior (3 Credits)

Explores contributions of social research to understanding what facilitates and motivates people's adoption of sustainable environmental behaviors. It examines personal and collective behaviors, at scales that range from buildings to global environmental change, in the developed and developing world. Prereq: Admission to the PhD program in Design and Planning or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7014 - Colloquium (1-3 Credits)

Presentations of research projects by students, college faculty members and visitors. Repeatable. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7015 - Historiography and Architecture (3 Credits)

Advanced seminar concerning the study of the written record of the past and how it is established. Readings focus on canonic texts formative to the discipline and the strategies they offer for historical research. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7016 - Architecture, in Theory (3 Credits)

Explores theories and texts that have influenced the analysis and the production of architectural form. The focus is on the expressive potential of architectural forms and the modalities of the realization of this potential. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Cross-listed with ARCH 6254. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7017 - Pro-Seminar (3 Credits)

Advanced, graduate-level course (seminar, independent-study, or other) addressing the history of architecture, landscape, or urbanism. Prereq: "Course is offered to doctoral students but masters students may enroll with instructor approval." Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7686 - Special Topics in Design and Planning (1-3 Credits)

Various topical areas in design and planning are studied, including those in history, theory, methods, and practice. Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restriction: Restricted to majors within the College of Architecture and Planning

DSPL 7810 - Independent Study: DSPL (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design and planning. Prereq: Permission of instructor. Repeatable. Max Hours: 16 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 16.

DSPL 7950 - Doctoral Thesis Research (1-10 Credits)

Conducting research for doctoral dissertation, including data collection, analysis and presentation of findings. Prereq: Completion of core of PhD program. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Additional Information: Report as Full Time.

Doctoral Studies in Educ Prog (DSEP)

DSEP 6000 - Academic Writing for Doctoral Students (1 Credit)

Tailored for graduate students in education. Focuses on techniques for improving academic writing, particularly planning, organizing, drafting, revising, and editing papers, i.e. course assignments, portfolio products, doctoral proposals or dissertation chapters. Prereq: Admission to doctoral program. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

DSEP 6010 - APA Conventions in Academic Writing (1 Credit)

This workshop, specifically directed to doctoral students, concentrates on practical issues involved in documenting sources and following conventions for other text features using the current Publication Manual of the American Psychological Association and updates posted on the APA Web site. Prereq: Admission to the doctoral program. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

DSEP 6020 - Advanced Academic Writing for Doctoral Students (1 Credit)

This workshop is designed for doctoral students in education. Focuses on practical strategies for managing, organizing, revising and editing academic papers, especially complex writing projects such as dissertation proposals and dissertation chapters. Prereq: DSEP 6000 or permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

DSEP 7830 - Special Topics (1-6 Credits)

Special topics that reflect current research and scholarly exploration of leadership and innovation. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

DSEP 7840 - Independent Study: DSEP (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

DSEP 8990 - Doctoral Research Project Seminar (1-10 Credits)

Doctoral Research Project coursework toward the completion of an EdD degree in Education. Max hours: 10 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

DSEP 8994 - Doctoral Dissertation (1-10 Credits)

Doctoral dissertation coursework toward the completion of a EdD or PhD degree in Education. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Additional Information: Report as Full Time.

Early Childhood Education (ECED)

ECED 5010 - Curriculum in Early Childhood Education (3 Credits)

Review of principles of early childhood curriculum and program development. Linkages are made between theoretical bases of development and curriculum planning. Curriculum areas considered include language and literacy, mathematics, motor, social-emotional, science, social studies and aesthetic development. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5040 - Administrative Seminar (3 Credits)

Emphasizes topics required of administrators to effectively lead and manage early childhood inclusive classrooms or other related programs including leadership capacity, professionalism, administration, teaming/collaboration, communities of practice, staff management, safety, and professional development. Cross-listed with ECED 4040. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5060 - Working with Families and Communities (3 Credits)

Theories, practices and research related to working with families and communities. Topics include: social systems perspective, family structures and forms; family support systems; family-centered practice; family/professional partnerships; effective communication; and working with parents of children with special needs. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5070 - Social Competence and Classroom Supports (3 Credits)

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 7070. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5080 - Language and Literacy in Young Children (3 Credits)

Overview of theories and research in early language and literacy development. Emphasis on sociocultural beliefs and practices associated with the use of language and literacy in the different contexts. Information about language disorders found in early childhood settings is discussed. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5091 - Educators as Social Change Agents (3 Credits)

Focus on developing knowledge, skills and dispositions to advance equity and social justice in classrooms, programs, and communities to activate educators as social change agents and implement quality inclusive practices for young children from diverse backgrounds. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5102 - Introduction to Developmentally Appropriate Curriculum (1-3 Credits)

Introduces developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Subject areas considered include literacy, language arts; mathematics, computers, blocks; science, outdoor education; social studies, thematic units; and art, drama, music, physical activity. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5104 - Advanced Developmentally Appropriate Curriculum (1-3 Credits)

Extends earlier learning about developmentally appropriate curriculum and instructional practices in early education and the elementary grades. Students elaborate their knowledge of subject area materials and activities. A curriculum unit that is developmentally appropriate is planned, implemented and evaluated. Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

ECED 5110 - Advanced Infant and Toddler Development: (3 Credits)

Focuses on development of infants/toddlers to inform responsive caregiving practices. Develop observation skills to understand infant/toddler behavior. A relationship-based approach to curriculum is emphasized. State requirements for licensed infant/toddler programs, accreditation and quality standards are discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5200 - Screening and Assessment of Young Children (3 Credits)

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 7500. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5202 - Classroom Management to Promote Positive Behavior (3 Credits)

Evidence-based classroom management strategies to promote social competence and reduce behavior problems. Includes strategies for responding to challenging behavior and developing individualized behavior support plans. Explores factors that influence the lives of young children including family disruption, stress, violence and trauma. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 5210 - Overview of Infant Toddler Autism Services (3 Credits)

This course will provide students with a general introduction to the legal and procedural elements that characterize state-of-the-art services to infants and toddlers with ASD. The course will review the Federal mandate for services, principles of practice, and evidence-based teaching strategies for children with autism. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5211 - Applied Treatment Delivery for Infants and Toddlers with ASD (3 Credits)

The course explores current treatment methods and philosophies for young children with Autism Spectrum Disorder (ASD). Common intervention approaches are reviewed, with discussion of the evidence base of each. Intervention goals covered address language, play/ socialization, early adaptive skills, and positive behavior. Must be accepted into the Infant Toddler Autism Certificate Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5212 - Coaching for Families Infants/Toddlers w/ Autism (3 Credits)

This course provides the knowledge and skills necessary to implement recommended, evidence-based practices with families of infants and toddlers with or at risk for ASD. The course will review current evidence based strategies for supporting families, collaborating with families, and using evidence-based family coaching strategies. Must be accepted into the Infant Toddler Autism Certificate Program Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5301 - Child Development: Theory to Leadership Practices (3 Credits)

This course will provide an introduction to theories of child development from an interdisciplinary perspective. It examines development in the cognitive and socioemotional domains utilizing biological, social, psychological and anthropological perspectives and how theory is used to shape program models. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5311 - Equity for Leadership in Early Childhood Programs (3 Credits)

This course is designed to provide early childhood leaders with an understanding of the equity issues present in early childhood systems and how these issues are reflected in individual identities and programs. Theories from the academic community will be used to facilitate student growth in understanding how these issues interact with them at a personal, professional and leadership level. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5312 - Leading Learning Organizations (3 Credits)

This course will deepen student's capacity to lead effectively and learn how to create an adaptive, flexible learning organization well positioned for delivering effective and sustainable programs and services on behalf of young children and families. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5320 - Community-Based Action Research: Capstone (3 Credits)

This course is designed to foster the leader's appreciation, skills, and practice as a participatory action researcher. Students will learn these concepts by leading a participatory action-research project in their community around a challenging early childhood issue and will present their action research project culminating at a Capstone Celebration. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5330 - Introduction to Transformational Leadership (3 Credits)

This course outlines the evolution of leadership theory over the past half-century and immerses students in an exploration of the values, leadership capacities, and practices that define transformational leadership as they apply to effecting change to support the success and well-being of young children and their families and communities. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5340 - Strategic Leadership & Current Issues in Early Child (2 Credits)

This courses addresses current issues in research, theory, policy development, and administrative leadership of programs for all young children. Strategic Leadership anchors all decisions to a shared vision through the systematic evaluation and strategic planning for program or organization growth and service. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 2 Credits.

Grading Basis: Letter Grade

ECED 5350 - Policy and Advocacy in Early Childhood (3 Credits)

This course provides the historical and political context of early care and education in the United States. Local, state and federal mandates, public laws, and legislative procedures and initiatives will be investigated. Prereq: Must be admitted to the Buell Early Childhood Leadership Program (BECLP). Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5410 - Coaching for Early Childhood Professionals: Foundations (3 Credits)

The Foundations course focuses on learning, understanding and using relationship and evidence-based coaching skills in early childhood settings. Students will practice the fundamentals of coaching using a systematic, individualized, reflective approach and sharing experiences with others in the course. Cross-listed with ECED 4410. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5420 - Coaching Early Childhood Professionals: Awareness (3 Credits)

The Awareness course focuses on increasing coaches' skills at introspection, thoughtful planning, intentional application of coaching knowledge and skills, and continuous improvement. Students will integrate skills with effective application in class and real life coaching experiences, managing progress and accountability. Cross-listed with ECED 4420. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5430 - Coaching for Early Childhood Professionals: Attuning (3 Credits)

The Attuning course will integrate skills from the Foundations and Awareness courses to complete the EC Coaching Certificate. Students practice refining and altering coaching based on needs and readiness. Students learn sustainable organizational change that embed coaching in all professional practice. Cross-listed with ECED 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5650 - Dual Language Learners Learning and Development (3 Credits)

The course will review current research on the learning and development of young dual language learners (birth through 8) and the classroom environments and instruction that can promote their learning. The course uses a socio-cultural framework to view children's learning. Cross-listed with ECED 4650. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5800 - Workshop: Topics in Early Childhood Education (1-4 Credits)

Topics and credit hours vary from semester to semester. Cross-listed with ECED 4800. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

ECED 5840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECED 5850 - Capstone in Early Childhood Education (3 Credits)

Capstone is a final project that demonstrates your academic and professional development. It explains professionally who you are, where you have been, how you have developed in ECE. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 5933 - Internship III & Collaborative Learning Community (2-8 Credits)

ECED 5933 is the final internship in a series of three completed during the professional year of the ECE program plan that provides the necessary learning opportunities for candidates to gradually develop their practice to be licensed as an early childhood educator. Cross-listed with ECED 4933. Repeatable. Max Hours: 8 credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

ECED 6010 - Literacy and Mathematics K-2 (3 Credits)

Principles of early reading and mathematical development for grades K-2 including diverse instructional strategies and differentiation for children with disabilities. Linkages are made between child development and learning expectations for mathematics, reading and writing and curriculum planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

ECED 6100 - Medical and Physiological Aspects of Development (3 Credits)

Presents medical and physiological aspects of development including an understanding of chronic illness/medical fragility in young children and the effects on families, school, and community. Examination and professional responses to cultural interpretation of medical issues are discussed. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6200 - Early Intervention Strategies (3 Credits)

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 7200. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6300 - Contextual Curriculum I (3 Credits)

This course focuses on the role of the teacher in developing a contextual curriculum that deeply engages learners. Developing curriculum includes observing learners, documenting observations using technology, and reflecting on documentation with colleagues to intentionally implement curriculum plans. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6310 - Contextual Curriculum II (3 Credits)

This course builds upon competencies developed in ECED 6300: Contextual Curriculum I through curriculum development that relies on the cyclical process of critical observation, documentation, analysis, reflection, and provocation. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6320 - A Colorado Interpretation of Reggio Emilia Approach (3 Credits)

This course focuses on the Reggio Approach to Early Childhood Education and its interpretation in a Colorado context, Boulder Journey School. Students will experience three modules, each with cycles of inquiry, construction of understandings, application into their own context and mediation by course instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6330 - Supportive Social Learning (3 Credits)

This course will provide students with the strategies that promote social competence and reduce the potential for interactions and behaviors that often challenge teachers. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6340 - Messing About with STEM (3 Credits)

This course focuses on the role of the teacher in supporting STEM experiences in diverse contexts. Students will draw from relevant research and philosophy of science, combined with inquiry-based experiences guided by established frameworks, to strengthen their STEM mindset. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6350 - Literacy and the Hundred Languages (3 Credits)

In-depth study of scientific and theoretical foundations of communication and literacy development, the conceptual paradigm of 100 languages of children, the nature of languages, and acquisition patterns in contexts of individual variation, cultural and linguistic differences, or language challenges. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6360 - Children and Teachers as Change Agents (3 Credits)

This course focuses on partnering with children and other educators around a community-based action project that will contribute to the community. Students will review literature and documentation, collaborate, design, lead, and advocate around a topic that relates to young children. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ECED 6690 - Seminar: Research and Current Issues in Early Childhood Education (3 Credits)

Research methods are reviewed and then selected topics are considered. Emphasis is on research findings and current issues of importance to teachers, administrators, specialists, collaborator/consultants, and researchers in early childhood and early childhood special education. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 6910 - Early Childhood Special Education Infancy Practicum (1-4 Credits)

Supervised field-based experiences in settings for children with disabilities and at-risk infants, toddlers, and their families. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 6911 - Initial Practicum and Field Experience in Early Childhood Education (1-4 Credits)

In this experience, you will be introduced to an array of skills/practices that support working effectively with young children and families in the context of their local community. You will work within the community to support children's academic/social development. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

ECED 6912 - Early Childhood Special Education Preschool Practicum (1-4 Credits)

Supervised field-based experiences in settings for young children with disabilities and their families, including school districts and community agencies. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200.

Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 6914 - Early Childhood Special Education Primary Practicum (1-4 Credits)

Supervised field-based experiences in kindergarten through second grade settings with typically developing children, children with special needs and special education teams. Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: ECED 5010, 5070, 5080, 5200, 6100, and 6200

ECED 7000 - ECE Today: Examining Practices, Policies, & Key Issues (3 Credits)

This course provides in-depth understanding of the issues that shape contemporary early care and education in the U.S. The course addresses historical and contextual variables, providing a thorough overview of the pedagogy, practices, and policies framing the design and delivery of ECE. Cross-listed with EDUC 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7002 - Early Childhood Leadership Seminar II (3 Credits)

The purpose of the course is to provide scholars with leadership knowledge and skills to implement policies, laws, programs, and systems that support the use of evidence-based practices with young children with disabilities. Prereq: ECED 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECED 7000 Restriction: Restricted to EDHD-PhD, LDRE-EDd and EDLI-PhD majors within the School of Education and Human Development.

ECED 7004 - Early Childhood Leadership Seminar III (3 Credits)

The purpose of this seminar is to provide the knowledge and skills to implement evidence-based practices in early childhood settings. This seminar will focus on policies and practices that support implementation, scale-up, and sustainability of evidence based practices in early childhood systems. Prereq: ECED 7002. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: ECEC 7002 Restriction: Restricted to EDHD-PhD, LDRE-EDd and EDLI-PhD majors within the School of Education and Human Development.

ECED 7010 - History, Child Development, and Equity: Early Childhood (3 Credits)

This course critically considers the developmental science that informs policy and program development; the social, political and economic forces that shape the study of young children and contribute to trajectories that benefit some children while disadvantaging others; the changing roles of families; and implications of these issues for policy. Cross-listed with EDUC 7010. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECED 7011 - Proseminar I in Child, Youth, and Family Studies (1 Credit)

This course aims to introduce students in the Child, Youth, and Family Studies PhD pathway to doctoral studies and to faculty research. The course is also designed to support students in situating themselves in the discipline, enhancing their scholarly identity, and refining academic writing and presentation skills. Cross-listed with EDUC 7011 and HDFS 7010. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

ECED 7020 - ProSeminar II in Child, Youth, and Family Studies (1 Credit)

This course is for 2nd year students in the Child, Youth, and Family Studies PhD pathway. The course is designed to support students in developing a research agenda, exploring ethics in research, enhancing scholarly identity, and preparing for comprehensive examinations. Prereq: HDFS 7010 or ECED 7011 or EDUC 7011. Cross-listed with HDFS 7020 and EDUC 7020. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011.

ECED 7030 - ProSeminar III in Child, Youth, and Family Studies (1 Credit)

This course aims to provide third year doctoral students in the Child, Youth, and Family Studies PhD pathway with an immersive writing opportunity and professional development experience to help prepare for comprehensive examinations, the dissertation, and post graduate school life. Prereq: ProSem I and ProSem II (HDFS 7010 or ECED 7011 or EDUC 7011 & HDFS 7020 or EDUC 7020 or ECED 7020). Cross-listed with EDUC 7030 and HDFS 7030. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011 AND HDFS 7020 or ECED 7020 or EDUC 7020.

ECED 7070 - Social Competence and Classroom Supports (3 Credits)

Emphasizes prevention, positive behavioral interventions and support, and social/emotional development for children birth to eight. Focus on the practical application of intervention strategies based on current research and evidence-based practices. Cross-listed with ECED 5070.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECED 7200 - Early Intervention Strategies (3 Credits)

Explores current research, knowledge, and skills related to evidence-based intervention strategies and service delivery in high quality inclusive settings for young children with special needs from infancy through age eight. Cross-listed with ECED 6200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7500 - Screening and Assessment of Young Children (3 Credits)

Provides knowledge and field-based experience in the administration and scoring of screening and assessment for infants, toddlers, and preschool children. Understand and administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based assessments. Cross-listed with ECED 5200. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

ECED 7830 - Special Topics in Early Childhood Education (1-3 Credits)

Study of special topics that examine community and educational settings in Early Childhood Education to be selected by the instructor. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Economics (ECON)

ECON 5030 - Data Analysis with SAS (3 Credits)

Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications(ECON 3811) or a similar course is strongly recommended as preparation for this course. Cross-listed with ECON 4030. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall, Spring.

ECON 5050 - Special Economic Problems (1-8 Credits)

Provides students the opportunity to critically evaluate some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4050. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5073 - Microeconomic Theory (3 Credits)

Fundamental features of partial equilibrium theory of the firm, consumer and market. General equilibrium and welfare economic topics are examined. Features of the models that have empirical applications are accented. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5083 - Macroeconomic Theory (3 Credits)

Examines the major macroeconomic models within a common framework. Differences in the foundations, structure, and policy implications of the competing models are analyzed. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5090 - History of Economic Thought (3 Credits)

Traces the development of economic thought from ancient times to the 20th century. Considers the context in which these ideas were developed and their relationship to modern economic thought and contemporary economic problems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Microeconomics (ECON 2022) and Macroeconomics (ECON 2012) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4090. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5150 - Economic Forecasting (3 Credits)

Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Statistics with Computer Applications (ECON 3811) or similar coursework is strongly recommended as preparation for this course. Cross-listed with ECON 4150. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5410 - International Trade (3 Credits)

Trade theory identifies who wins and loses from trade and why there are usually overall gains. Explores issues in immigration, globalization, income inequality, tariffs, dumping, the WTO, the environment, wages and growth strategies among others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4410. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5530 - Economics of Natural Resources (3 Credits)

Examines economic models of renewable resource management and models of exhaustible resource depletion. Analyzes decisions made by private firms and governments affecting the methods and rate of resource development. Examines the effects of resource development on economic growth and environmental quality and the effects of economic development on resource scarcity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4530. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5540 - Environmental Economics (3 Credits)

Economic approach to environmental problems: relationship between ownership structures, externalities and environmental damage; poverty, population pressure, and environmental degradation; valuation of environmental amenities; sustainability of economic activity; cost-benefit analysis applied to the environment; evaluation of alternative instruments for environmental control. Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4540. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite ECON 5073 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5660 - Health Economics (3 Credits)

Introduces students to analytical skills and economic methods, and demonstrates how these methods can be applied to issues in health policy and management. Topics include: demand for health and medical care; health care costs, health reform, medical technology; market for health insurance; physicians, hospitals, and managed care; pharmaceuticals; regulations in the U.S. health care sector; demand for addictive substances; infant and maternal health; international comparisons of health care systems. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5740 - Industrial Organization (3 Credits)

Examines the determinants of, and linkages between, market structure, firm conduct, and industrial performance. Topics include: determinants of the market size; impact of different market structures on prices and outputs; strategic behavior of firms to prevent entry or induce exit of rival firms; collusion; price discrimination; advertising; competition, monopoly, and innovation; implications for economic efficiency and public policy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Cross-listed with ECON 4740. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5800 - Special Topics (1-3 Credits)

Current economics topics to be determined by the instructor.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

ECON 5803 - Mathematical Economics (3 Credits)

Introduces the use of mathematics in advanced micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations. Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll ECON 5803. Term offered: fall, spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Students must be admitted to the MA in ECON, MS or PhD in Health Economics in order to enroll in ECON 5803.

ECON 5813 - Econometrics I (3 Credits)

Theory and application of statistical techniques used to analyze economic problems. Topics include simple and multiple regression models, simultaneous equation models, and the problems encountered in their application. Students formulate models, obtain data, estimate models, interpret results and, forecast. Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing and coreq ECON 5803 or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Fall.

ECON 5823 - Econometrics II (3 Credits)

Second course in the econometrics sequence, covering intermediate topics in cross-section and time series analysis. Topics include limited dependent variables, autoregressive and distributed lag models, longitudinal data analysis and unit roots, co-integration and other time-series topics. Prereq: ECON 5813 with a B- or higher.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA). Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5813 with a B- or higher Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (ECON BA-BMA).

Typically Offered: Spring.

ECON 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ECON 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 5950 - Master's Thesis (1-4 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

ECON 6010 - Advanced Microeconomic Theory (3 Credits)

Recent and contemporary literature on fundamentals of economic theory. Consideration of value theory with particular emphasis on methodology, theory of demand, theory of the firm, and theory of distribution. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 6020 - Advanced Macroeconomic Theory (3 Credits)

Considers general equilibrium and aggregative analysis in economic theory, with particular emphasis given to the theory of employment, consumption and investment. Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5083 with a B- or higher. Restriction: Restricted to student with graduate standing

ECON 6053 - Seminar In Applied Economics (1.5 Credits)

Familiarizes students with applied research in economics. Students read, discuss, and critique articles in economic journals. Emphasis is placed on research design and methods employed in these articles to prepare students for development of their own research projects in subsequent courses. Topics vary with instructor, and may include international economics, labor economics, monetary theory, public or finance and development economics. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6054 - Seminar In Applied Economics II (1.5 Credits)

Familiarizes students with state-of-the-art applied economic research. Students read, discuss, and critique articles published in economic journals. Note: Topics vary with the instructor. Prereq: ECON 5813 with a B- or higher. Coreq: ECON 5823. Restriction: Restricted to students with graduate standing. Term offered: spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: ECON 5813 with a B- or higher Coreq: ECON 5823 Restriction: Restricted to students with graduate standing

ECON 6060 - Special Topics (1-3 Credits)

Special topics in advanced microeconomics. Consideration of value theory based upon methodology, theory of demand, and theory of distribution. Restriction: Restricted to students with Graduate standing. Introduction to Mathematical Economics (ECON 3801) or similar coursework is strongly recommended as preparation for this course. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ECON 6073 - Research Seminar (3 Credits)

Focuses on training students to do rigorous research in economics. Topics include the analysis of large data sets, further development of econometric skills, and writing a research paper. Note: Students attend lectures and also meet regularly with the instructor in the process of doing a sophisticated research project. ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5823 with a B- or higher and either ECON 6053 or ECON 6054 with a B- or higher. Restriction: Restricted to students with graduate standing

ECON 6210 - Public Finance (3 Credits)

Advanced economic theory applied to the problems of public and private sector decision making. Applied topics in taxation, education, voting theory, welfare economics, externalities and public goods. Prereq: ECON 5073. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6410 - International Trade (3 Credits)

Contemporary and classical literature on theories of international trade. Topics include the determination of the pattern and terms of trade, the relationship between growth and trade, and commercial policy. Prereq: ECON 5073. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6420 - International Finance (3 Credits)

Topics in international finance, including exchange rate determination, the adjustment process, international financial markets and the international monetary system. Prereq: ECON 5073. Max hours: 3 Credits. Grading Basis: Letter Grade

ECON 6610 - Labor Economics (3 Credits)

Advanced study of the labor market, including: history, nature, and function of labor organizations; the process of wage determination; and the formation of public policy. Prereq: ECON 5073 and 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6666 - The Economics of Health Behaviors (3 Credits)

This course teaches an economic approach to studying health behaviors and the policies that affect them. Special attention will be paid to analyzing the effects of excise taxes and to understanding the quasi experimental approach to doing applied research in economics. Prereq: ECON 5073 and ECON 5813 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6770 - Economic Growth and Development (3 Credits)

Considers the role of planning in economic development, with particular reference to investigation of planning problems, especially in less developed countries. Prereq: ECON 5073 and 5803. Max hours: 3 Credits. Grading Basis: Letter Grade

ECON 6801 - Advanced Mathematical Economics (3 Credits)

Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory. Prereq: ECON 5803 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

ECON 6810 - Econometrics and Forecasting (3 Credits)

Covers advanced topics in cross-sectional and time-series analysis. Emphasizes important theoretical and empirical issues encountered in applied work in economics and business. Topics include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students learn to execute estimation and forecasting projects soundly. Prereq: ECON 5813 and 5823 with a B- or higher. Restriction: Restricted to students with Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 and ECON 5813 with a B- or higher Restriction: Restricted to students with Graduate standing

ECON 6840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ECON 7073 - Advanced Microeconomic Theory II (3 Credits)

This is a second-semester Ph.D. level course in microeconomics. The first semester course discussed consumer and producer theory; this course will discuss game theory, market equilibrium, and information economics. Prereq: ECON 5073 with a B- or better. Restriction: Restricted to students with Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ECON 5073 with a B- or better Restriction: Restricted to students with Graduate standing

ECON 7661 - Health Economics I (3 Credits)

This is the first course in the Ph.D field sequence for Health Economics. The goal of this course is to familiarize you with the basic theory and empirical findings in the part of health economics which focuses on the market for medical care and the policy that surrounds it. Pre-req or co-req ECON 5823. Students must enroll in both courses concurrently or have completed ECON 5823 with a B- or better. Restricted to students with graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 7662 - Health Economics II (3 Credits)

This course teaches an economic approach to studying the various policies that affect these risky health behaviors. The extensive economic literature on the causes and consequences of risky health behaviors will be studied. Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite ECON 5823 OR prerequisite ECON 5823 with a grade of B- or better. Restricted to students with graduate standing.

ECON 8990 - Doctoral Dissertation (1-10 Credits)

Designed to allow doctoral students to conduct research for course credit prior to advancement to candidacy. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must be in the Health Economics PhD program and have permission from the instructor to be eligible for this course. Term offered: fall, spring. Repeatable. Max hours: 50 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 50.

Additional Information: Report as Full Time.

Education Admin & Supervision (EDUC)

EDUC 5000 - Special Topics: Administrative Leadership and Policy Studies (0.5-10 Credits)

Specific topics vary. Focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 40.

EDUC 5001 - Special Topics: Administrative Leadership and Policy Studies (1-10 Credits)

Repeatable. Max Hours: 40 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 40.

EDUC 5010 - Paraeducator Supervision Academy (1 Credit)

Provides the paraeducator with knowledge and skills to work effectively in teams. Paraeducators refine their knowledge of the characteristics of paraprofessionals in education, the distinction between professional and paraprofessional roles and responsibilities, liability and ethical issues. Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5015 - Developmental Intervention Supervisor Academy (DISA) (1 Credit)

Developmental Intervention Supervisor Academy provides early intervention professionals with the knowledge and skills to work effectively in teams and to utilize and supervise Developmental Intervention Assistants (DI Assistant is the title used in Colorado for paraprofessionals in early intervention services). Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5020 - Trainers of Paraeducator Academy (1 Credit)

Provides the professional educator with the skills to provide effective presentations to paraprofessionals in schools. Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5025 - Developmental Intervention Trainers Academy (DITA) (1 Credit)

Developmental Intervention Trainer Academy (DITA) is offered to early interventional professionals who have completed EDUC 5015 (DISA). DITA provides the participants skills to become effective trainers who deliver training to Developmental Intervention Assistants (i.e. paraprofessionals in early intervention services in Colorado). Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5030 - Top Cadre of Trainers (TOPCAT) Seminar (3 Credits)

Provides CO-TOP Trainers (school professionals who have been through the PSA: EDUC 5010 and TOPA: EDUC 5020) ongoing support in their roles as supervisors and trainers of paraeducators. Through this seminar trainers receive updated information about CO-TOP Academies, find collegial support from other trainers, exchange ideas, gain presenting and adult teaching ideas, and receive feedback on their teaching of paraeducator academies. This seminar also addresses the questions and needs of the individual CO-TOP trainer with regard to CO-TOP paraeducator training materials and processes. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5040 - Mentoring Novice and Pre-Service Teachers (1 Credit)

Designed to help participants develop or enhance the skills necessary to successfully work with candidates who are completing teacher education programs. Concentrates on supervision and conference skills, adult learning theory, and communication skills. Max hours: 1 Credit.

Grading Basis: Letter Grade

EDUC 5651 - Foundations of Leadership (3 Credits)

This courses focuses on leadership and the characteristics and foundational elements of what the leaders need to think about and do while providing the opportunity for students to apply this foundational learning to leadership in their own organization. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5652 - Leadership for Equity/Social Justice (3 Credits)

Understand our own experiences and experiences of historically marginalized groups, with the historical and philosophical forces that have led to inequities, critically analyze current conditions and to work to develop school policies, curriculum and relationships to create access and opportunities. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5653 - Leadership Practices for Responsive Change (3 Credits)

This course focuses on leadership and the change process of individual and organizational responsive change with opportunity for students to learn about/apply this learning to the process of leading responsive change in the context of an organization. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5654 - Leadership Practice Capstone (3 Credits)

The Capstone Experience is a culminating project that provides a way for students to demonstrate the knowledge and skills they acquired during the MA program, linked to issues of equity or social interest related to the United States educational system. Prereqs: EDUC 5651, EDUC 5652, and EDUC 5653. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereqs: EDUC 5651, EDUC 5652, and EDUC 5653.

EDUC 5655 - Leadership Practices for Transformative School Reform (3 Credits)

This course will create a community of learners who can work together to investigate constructs and principles for school turnaround and transformation. The course will draw on previous learning for the practical application of intentional leadership practices for school reform and transformation. Change theory will be considered and applied to reform and transformation. Students will have the opportunity to study current reform efforts. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 5751 - Principal/Administrator Licensing I (3-9 Credits)

This program section (1 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5752 - Principal Administrator Licensing II (3-9 Credits)

This program section (2 of 4) combines continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5753 - Principal/Administrator Licensing III (3-9 Credits)

This program section (3 of 4) combines Continued learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5754 - Principal or Administrator Licensing IV (3-9 Credits)

This program section (4 of 4) combines foundational learning in leadership, school improvement, instructional leadership and equity via hybrid sessions. Clinical-practice experiences are required. Assessment is performance-based and submitted to LIVETEXT. Prereq: admission to the program. Max hours: 9 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to LEOS majors within the School of Education and Human Development (LEOS-MA, LEOS-EDS, LICN-LICG PRN, LDRE-EDD).

EDUC 5836 - Workshop: Educational Administration, Curriculum and Supervision (1-4 Credits)

Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

EDUC 5840 - Independent Study: EDUC (1-4 Credits)

Master's. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

EDUC 5950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 16 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 16.

Additional Information: Report as Full Time.

EDUC 6000 - Special Topics: Administrative Leadership and Policy Studies (1-10 Credits)

Specific topics vary; focus is on faculty-developed options to standard course offerings to facilitate program development and distance-learning activities. Repeatable. Max Hours: 40 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 40.

EDUC 6840 - Independent Study (1-4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade

EDUC 6951 - Master's Thesis (4 Credits)

Repeatable. Max hours: 16 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 16.

Additional Information: Report as Full Time.

EDUC 7000 - ECE Today: Examining Practices, Policies, & Key Issues (3 Credits)

This course provides in-depth understanding of the issues that shape contemporary early care and education in the U.S. The course addresses historical and contextual variables, providing a thorough overview of the pedagogy, practices, and policies framing the design and delivery of ECE. Cross-listed with ECED 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7010 - History, Child Development, and Equity: Early Childhood (3 Credits)

This course critically considers the developmental science that informs policy and program development; the social, political and economic forces that shape the study of young children and contribute to trajectories that benefit some children while disadvantaging others; the changing roles of families; and implications of these issues for policy. Cross-listed with ECED 7010. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7011 - Proseminar I in Child, Youth, and Family Studies (1 Credit)

This course aims to introduce students in the Child, Youth, and Family Studies PhD pathway to doctoral studies and to faculty research. The course is also designed to support students in situating themselves in the discipline, enhancing their scholarly identity, and refining academic writing and presentation skills. Cross-listed with ECED 7011 and HDFS 7010. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

EDUC 7020 - ProSeminar II in Child, Youth, and Family Studies (1 Credit)

This course is for 2nd year students in the Child, Youth, and Family Studies PhD pathway. The course is designed to support students in developing a research agenda, exploring ethics in research, enhancing scholarly identity, and preparing for comprehensive examinations. Prereq: HDFS 7010 or ECED 7011 or EDUC 7011. Cross-listed with HDFS 7020 and ECED 7020. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011.

EDUC 7030 - ProSeminar III in Child, Youth, and Family Studies (1 Credit)

This course aims to provide third year doctoral students in the Child, Youth, and Family Studies PhD pathway with an immersive writing opportunity and professional development experience to help prepare for comprehensive examinations, the dissertation, and post graduate school life. Prereq: ProSem I and ProSem II (HDFS 7010 or ECED 7011 or EDUC 7011 & HDFS 7020 or EDUC 7020 or ECED 7020). Cross-listed with ECED 7030 and HDFS 7030. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFS 7010 or ECED 7011 or EDUC 7011 AND HDFS 7020 or ECED 7020 or EDUC 7020.

EDUC 7100 - Leadership in Education (3 Credits)

Orients students to broad periods of administrative science, philosophical and behavioral underpinnings of various models and types of leadership, and develops doctoral-level analysis and writing skills to articulate self-knowledge as leader and the application of appropriate leadership practices in context. Prereq: admission to the doctoral program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EdD, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDUC 7230 - Organizational Performance In Educational Contexts (3 Credits)

Explores connections between organizational behaviors and outcomes as well as external and internal factors influencing organizational behavior. The course focuses on how education organizations learn, how they can use that learning to improve performance, and what techniques are available to help understand present performance and affect future performance. Prereq: permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EdD, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDUC 7500 - Strategic Human Capital Development (3 Credits)

This course focuses on understanding and leveraging the personnel function of an educational organization. You will learn how to strategically align and maximize your human capital with organizational strategic objectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7510 - Strategic Organizational Management (3 Credits)

An effective partnership between the board, community and institutional leader is essential to fulfilling the mission of an educational organization. This course examines the importance of strategic visioning, strategic planning, and specific communication strategies. Max hours: 3 Credits. Grading Basis: Letter Grade

EDUC 7520 - Strategic System Improvement (3 Credits)

The fundamental purpose of educational organizations (schools, districts, community colleges, higher education, non-profits) is to ensure high levels of learning for all. This course addresses topics such as data development and management, accountability, curriculum assessment and instruction, continuous improvement, and professional learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7530 - Strategic Leadership Development (3 Credits)

Successful leaders are able to articulate, protect and promote what is important. This course will examine the challenges of educational leadership and help participants clarify the core values essential to their success as a leader. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7600 - Higher Education Policy and Governance (3 Credits)

In this course, students are challenged to explore the governance and policy environment of Higher Education, to understand the multiple layers of governance and the complex web of policy-making, to analyze the differences among systems of governance, and to evaluate the essential components and consequences of policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7610 - Strategic Enrollment Management in Higher Education (3 Credits)

Course is designed to deepen the understanding of the complexities of strategic enrollment management as research and practice, delving into the breadth of its critical issues and rapidly developing context, including the student lifecycle; the focus on equity and inclusion; emerging models for student success; and financial implications. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7620 - Contemporary Issues in Higher Education (3 Credits)

This course is a study of the critical, contemporary issues in higher education and the impact on institutions' goals for equity and student success. Students in the course will reach beyond the current context, understanding the origins of critical questions, and the impact of these issues on leadership decision-making. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

EDUC 7640 - Higher Education Finance and Strategic Resource Allocation (3 Credits)

This course is designed to introduce students to the complexity of higher education funding, the vast variations across systems, and the critical role of data informed decision making in strategic resource allocation its impact on student access and success. Students will enhance their own capacity to contextual decisions and consider parameters. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7650 - Data-Informed Decision-Making and Predictives in HED (3 Credits)

Course is designed to elevate the understanding of data-informed decision making and predictives as it relates to research & practice; defining leaders responsibility in creating a datadriven and ethically responsible culture using a lens of equity and inclusion. Max Hours: 3 Credits.

Grading Basis: Letter Grade

EDUC 7751 - Principal Licensure EDD Concentration Course I (3 Credits)

Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7751 will join a cohort of students in a hybrid cross-listed EDUC 5751, complete all work/assignments for PBA 1 and related PBA 5 assessments. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

EDUC 7752 - Principal Licensure EDD Concentration Course II (3 Credits)

Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7752 will join a cohort of students in a hybrid cross-listed EDUC 5752, complete all work/assignments for PBA 2 and related PBA 5 assessments. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

EDUC 7753 - Principal Licensure EDD Concentration Course III (3 Credits)

Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7753 will join a cohort of students in a hybrid cross-listed EDUC 5753, complete all work/assignments for PBA 3 and related PBA 5 assessments. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

EDUC 7754 - Principal Licensure EDD Concentration Course IV (3 Credits)

Course is offered for students taking the Principal Licensure EDD Concentration area. Students in 7754 will join a cohort of students in a hybrid cross-listed EDUC 5754, complete all work/assignments for PBA 4 and related PBA 5 assessments. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

EDUC 7840 - Independent Study: EDUC (1-4 Credits)

Doctoral. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Educational Foundations (EDFN)

EDFN 5000 - Food Justice in City & Schools (3 Credits)

Food justice examines systemic inequities in access to healthy food.

The history of school/community gardens, developments in urban agriculture and school/city policies are examined. The intersection of urban agriculture, hunger, and schooling/learning is examined in school gardens and school farmer's markets. Cross-listed with EDFN 4000. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 5001 - Problematizing Whiteness: Educating for Racial Justice (3 Credits)

Critical Whiteness Studies provides a deeper analysis of race that accounts for both sides of the race coin: the plight of people of color AND how Whites are complicit. This class looks deeper into how race operates within White contexts and how that impacts people of color so we bridge how Whites AND people of color can work together towards a racially equitable society. Cross listed with ETST 4010 and EDFN 4001. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 5010 - Social Foundations and Cultural Diversity in Urban Education (3 Credits)

This course focuses on the role of cultural diversity in the United States school system and what this means for educators oriented toward social justice. The intention of this course is to have teacher candidates engage in exploring the most salient issues surrounding education in the United States, developing an understanding of the complex relationships between schools and the larger society of which they are a part. This course closely examines important contemporary and historical societal issues such as race, social class, gender, ethnicity, sexual identity, politics, and dynamics of power and privilege. Cross-listed with EDFN 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 5050 - Critical Issues in American Education (3 Credits)

Examines the social values and forces in American society which shape or influence the aims, philosophies, methods, content, and problems of the American educational enterprise. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 5700 - Global Education and 21st Century Learning (3 Credits)

Explore challenges and opportunities of global citizenship. Articulate framework for 21st Century Learner. Examine influence of social and political movements, including colonization, on the development of communities and cultures. Explore connections and intersections of local and global issues and systems. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 5800 - Special Topics (1-3 Credits)

Topics will vary. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

EDFN 7240 - Culture of Education Policy (3 Credits)

This course examines major issues in education policy analysis. Students will be required to critically analyze an educational policy issue uncovering the context, determining how the policy was implemented and what the outcomes were, intended as well as unintended. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 7250 - School and Society (3 Credits)

Policies and educational reforms affecting the technical core of schooling: curriculum, teaching, learning, assessment, and organization. Students develop research and policy analysis skills and investigate social and political factors affecting what is taught and learned in schools. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDFN 7400 - Epistemologies: Ways Knowing, Res Paradigms, & Counter-Epistemologies (3 Credits)

Epistemologies addresses conceptions and approaches to ways of knowing including intellectual traditions and their history as well as epistemological counter-stories of marginalized and subaltern ways of knowing that expose the contingency and bias of dominant forms of knowing. Max hours: 3 Credits.

Grading Basis: Letter Grade

EDFN 7410 - Power and Privilege: The Social Construction of Difference (3 Credits)

This course will focus on understanding culture and diversity, recognizing the role of power and privilege in both individual and institutional interactions, and developing a philosophy of social justice and equity.

Prereq: Doctoral Student Status. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDFN 7420 - Foundations of Education in Urban and Diverse Communities (3 Credits)

This course focuses on the complex relationship between schools and the larger society of which they are a part. Emphasizing historical, political, and sociological perspectives, this course explores the interplay of social systems in education (economic, political, social, health, legal), analyze education policies, and the intended and unintended consequences of these processes. Prereq: Doctoral Student Status. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Leadership for Educ Equity or Education Human Development Doctoral Students

EDFN 7430 - Working with Families and Communities (3 Credits)

Designed for veteran and novice teachers and administrators to add to their present understanding of the function of families and communities in contemporary society. Participants examine key theoretical texts of important scholars in the field of human development, with an emphasis on topics such as the politics of everyday life, the salience of linguistic & cultural identity in the life of families/communities, and the political-economic and social factors that shape the "life course" of families/communities. Prereq: Doctoral Student Status. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDFN 7833 - Culture and Critical Theory (3 Credits)

Provides an introduction to critical inquiry. General topics include: the development and of the concept of culture, the development and application of critical theory, critical race theory and critical pedagogy. Through the course, students are guided to explore critical theory work in their own field. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

EDFN 7840 - Independent Study: EDFN (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Electrical Engineering (ELEC)

ELEC 5005 - IC Design (3 Credits)

Explores digital integrated circuit design including MOS processing steps, physical operation, building blocks of digital circuits, advanced nMOS, pMOS and CMOS circuit design, silicon VLSI technology and circuit and chip level. Spice and lay-out Editor are used. The physical relationship between circuit design and actual silicon layout and structure and technology are emphasized. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4005. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

ELEC 5025 - Device Electronics (3 Credits)

A course relating performance and limitations of solid state devices to their structures and technology. For both advanced circuit and device engineers. Semiconductor physics and technology, pn-junction and MOS devices used in modern integrated circuits. Prereq: ELEC 3225 and senior standing. Cross-listed with ELEC 4025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3225 Restriction: Senior standing

ELEC 5033 - Advanced Electromagnetic Fields (3 Credits)

A course focused on electromagnetic waves. Topics include: Poynting's power theorem, reflection and transmission of uniform plane waves in layered media, two-conductor transmission lines, rectangular wave guides, Smith Chart elements of radiation and antenna. Prereq: ELEC 3133 and permission of instructor for undergraduates. Cross-listed with ELEC 4133. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5133 - Electromagnetic Radiation and Antenna (3 Credits)

Solution of inhomogeneous wave equation. Radiation fields of elementary dipole, linear wire antenna, uniform and non-uniform linear arrays. Array synthesis. Farzone field patterns, directivity and beamwidth. Diffraction fields of aperture sources, horn antenna, conic surface reflector sources, lens antenna. Ray tracing methods. Transient-receive link. Selected Topics. Prereq: ELEC 4133, graduate standing and permission of instructor for undergraduates. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4133 or ELEC 5033

ELEC 5134 - Introduction to Microwave Circuit Design (3 Credits)

This course provides the basic principles of microwave circuit design, including transmission line theory, network parameters, signal flow graphs, design of high frequency matching networks, filters, hybrids and couplers using waveguide elements, high frequency amplifier and mixer design. Prereq: ELEC 3133. Cross-listed with ELEC 4134. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 or graduate standing

ELEC 5164 - Electric Drive Systems (3 Credits)

Covers power electronics drives for rotating electric machinery. Topics include power electronics elements for drives, load characteristics, dynamic modeling of AC machines, fundamental control algorithms, simulation and practical commercial drives. Prereq: ELEC 3164. Cross-listed with ELEC 4164. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5170 - Electric Drives Systems Laboratory (1 Credit)

Offers hands-on experience on rotating electric machine drive simulations and commercial systems. Sessions include pulse-width modulation (PWM) inverter, induction, DC, and synchronous machine drives. Matlab/Simulink and a commercial inverter will be utilized. Cross-listed with ELEC 4170. Prereq: ELEC 4164 or equivalent. Max Hours: 1 Credit.

Grading Basis: Letter Grade

ELEC 5174 - Power Electronic Systems (3 Credits)

Topics to be covered include: power electronics fundamentals and applications in power systems; uncontrolled, semi-controlled and fully controlled power semiconductors; converters design and control. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4174. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3164 or Graduate Standing

ELEC 5184 - Power Systems Analysis (3 Credits)

Topics to be covered include: complex power; per-unit quantities; modeling of generators, transformers and transmission lines; power flow problem; economic dispatch; faults and sequence networks; and an introduction to power system protection and dynamics. Prereq: ELEC 3164 and graduate standing or permission of instructor. Cross-listed with ELEC 4184. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3164 or Graduate Standing

ELEC 5194 - Power Systems Operation and Control (3 Credits)

This course introduces the student to various operational strategies the power industry uses today to operate the power system. Topics to be covered include: economic dispatch, unit commitment, optimal power flow (linear and nonlinear), transmission congestion, control areas, state estimation, and an introduction to power markets. Prereq: ELEC 4184 or ELEC 5184 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184 or ELEC 5184 or graduate standing.

ELEC 5210 - Optimization Methods in Engineering (3 Credits)

Unconstrained optimization, gradient methods, conjugate direction methods, data fitting and function estimation. Applications in control, system identification and radar systems. Optimization over a convex set, LMS algorithms in adaptive systems, convergence properties. Nonlinear programming, Lagrange multipliers, projection algorithms, games and minimax theorem, application to H infinity control, communication and signal processing. Prereq: MATH 3191 and 3200/3195. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MATH 3191 and (3200 or 3195)

ELEC 5220 - Methods of Engineering Analysis (3 Credits)

Real sequences and infinite series, convergence of the parameter estimates in self-tuning control. Uniform convergence and application to adaptive FIR filters. Improper integrals, application in filtering, prediction and communication. Analytic functions, Hardy spaces, maximum modulus theorem. Argument principle and Nyquist stability criteria. Calculus of residues, LQG problem. Conformal mappings, Nevelinna-Pick problem. Prereq: MATH 3191 and 3200/3195, graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (MATH 3191 and 3200) or MATH 3195 or Graduate Standing

ELEC 5230 - Advanced Linear Systems (3 Credits)

Mathematical description of both continuous and discrete-time systems; vector, normed and inner-product spaces; state-space, impulse response and transfer function descriptions; state-transition response matrices; eigenvalues and eigenfunctions; controllability; canonical form; state feedback; observers; realization theory. Prereq: MATH 3191, MATH 3200/3195 and permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (MATH 3191 and 3200) or MATH 3195 or Graduate Standing

ELEC 5248 - Digital Communication Systems (3 Credits)

Introduces digital communication systems covering elements of information theory; mathematical representation of signals and systems; modulation and demodulation for the additive Gaussian noise channel; Performance analysis of various transmission formats; synchronization; coded waveforms; decoding algorithms; and other related topics. Prereq: ELEC 3316, 3817; recommended ELEC 4247. Cross-listed with ELEC 4248. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5249 - Space Communications Systems (3 Credits)

Presents the art of space communications system design around the framework of the link budget and the essential analysis tool of the radio system designer. The budget is examined from theoretical and practical viewpoints. Pointers and motivation for further study in each of the related engineering disciplines are provided. Topics to be examined include satellite orbits, propagation, antennas, noise, modulation, coding and hardware or software. Prereq: Permission of instructor and graduate standing. Cross-listed with ELEC 4249. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5250 - Information Theory (3 Credits)

Introduces information theory and its application in computer science, communication theory, coding and applied mathematics. Entropy, mutual information, data compression and storage, channel capacity, rate distortion, hypothesis testing. Error detecting and correcting codes, block codes and sequential codes. Prereq: ELEC 3817 or CSCI 4535 or MATH 3800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3817 OR CSCI 4535 OR MATH 3800 OR Graduate Standing

ELEC 5252 - Computer Communication Networks (3 Credits)

Comprehensive study of issues arising in modern computer-communication networks, both wire-line and wireless, carrying traffics with heterogeneous characteristics. A conceptual and analytical approach to the design of network protocols in harmony with the appropriate modeling of the traffic and network environments. Issues covered include routing, transmission, performance monitoring, as well as and network management in ATM multi-media networks. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5276 - Digital Control Systems (3 Credits)

Analysis and design of discrete-time systems, as occurs when a digital computer is used to control physical systems. Topics include difference equations, Z-transform, sampled-data system modeling, sampling, discrete equivalents, stability, and discrete control design by root locus, direct design, frequency-response, and state space. Prereq: ELEC 3316, ELEC 3817, and graduate standing. Cross-listed with ELEC 4276.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: ELEC 4136 or Graduate Standing

ELEC 5294 - Advanced Power Electronic Systems (3 Credits)

The course focuses on the design, modeling, modulation, control and simulation of three-phase two-level voltage sourced inverters with emphasis on applications. Student will also be introduced to advanced topologies including diode clamped multilevel inverters, modular multilevel inverters and matrix converters. Prereq: ELEC 4174 or ELEC 5174. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4174 or 5174

ELEC 5333 - Introduction to Computational Electromagnetics (3 Credits)

An intro to computational electromagnetics based on the Finite Difference Time-Domain (FDTD) covering, finite difference methods, the Yee algorithm, numerical error, stability, boundary conditions, source excitations, hands-on programming experience and application of FDTD to real problems. Prereq: ELEC 3133 or grad standing. Cross-listed with ELEC 4333. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 or graduate standing

ELEC 5334 - Advanced Computational Electromagnetics (3 Credits)

This course on advanced computational electromagnetics covers Green's theorems and identities, vector potential theory, equivalence principles, numerical linear algebra, numerical integration, method of weighted residuals, integral equation methods, method of moments, and Prereq: ELEC 4133 or ELEC 5133 or grad standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4133 or ELEC 5133 or grad standing

ELEC 5373 - Optical Engineering (3 Credits)

This course introduces some of the most important concepts in optical engineering and prepares students a solid foundation to apply them to applications in the industry and academic research. Prereq: ELEC 3133. Cross-listed with ELEC 4373. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 Restriction: Restricted to students within the College of Engineering, Design and Computing

ELEC 5375 - Engineering Neuroscience (3 Credits)

In this course, mathematical models and data processing strategies will be introduced as well as other cutting-edge research techniques to help students understand how these techniques can be applied to solve modern neuroscience problems. Prereq: ELEC 3316 or graduate standing. Cross-listed with ELEC 4735 and NRSC 7674 (Anschutz Medical Campus course). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3316 or Graduate Standing

ELEC 5423 - Radio Frequency Laboratory (1 Credit)

Projects involve modern RF analyzers, waveguide devices, time-domain techniques, characterization of devices, signal propagation and scattering, harmonic mixing, and radio frequency identification. Students will gain experience using MATLAB for data acquisition and processing. Graduate students will explore projects in greater detail. Cross-listed with ELEC 4423. Max Hours: 1 Credit.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

ELEC 5433 - Fundamentals and Applications of Plasmas (3 Credits)

This course provides an introduction to plasmas, also known as the fourth state of matter, in nature and industry. Topics covered include single particle motions, plasma kinetic and fluid theory, cold and warm plasma models and interaction of electromagnetic waves with plasmas. Applications ranging from space sciences to medicine are explored.

Prereq: ELEC 3133 for undergraduate students or permission of the instructor. No prerequisite for CEDC graduate students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 + Engineering undergraduates or Prereq: Graduate Engineering

Typically Offered: Fall, Spring.

ELEC 5436 - Nonlinear Control Systems I (3 Credits)

Analysis and synthesis of nonlinear feedback control systems. Linearization's and stability in the small, equivalent linearization and the describing function. The dual input describing function. Stability in the large and the second method of Lyapunov. Stability of time-varying systems. Popov's method and extensions. Prereq: ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276 or Graduate Standing

ELEC 5444 - Power System Laboratory (1 Credit)

This lab introduces the student to modern computational tools used in power system analysis. Algorithms to solve the "power flow problem", the "economic dispatch problem", and the "optimal power flow problem" are discussed and implemented in the Matlab-Simulink mathematical analysis software package. Coreq: ELEC 4184. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: ELEC 4184.

ELEC 5446 - Introduction to Modern Control Theory (3 Credits)

State space representation of dynamic systems. Canonical forms. Frequency domain analysis. Controllability and observability. Design by statespace methods: pole-placement, linear observers, separation principle, robustness. Linear, quadratic optimum control. Prereq:

ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276.

ELEC 5455 - Computer Methods for Device Electronics (3 Credits)

Numerical analysis of PN junctions, Bipolar transistors, GAAS MESFETS, and MOSFETS. Numerical solution of discrete-form equations. Finite-difference method for semiconductor devices. Two-dimensional models: DC, transient, and small signal numerical analysis. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

ELEC 5456 - Sampled Data and Digital Control Systems (3 Credits)

Elements of sampling theory. Overview of design approaches via transform methods. Analysis and design in state space. Optimal control systems. Emphasis is placed on computer-aided design projects. Prereq: ELEC 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4276 or Graduate Standing

ELEC 5466 - Adaptive Control System Design (3 Credits)

Basic concepts in adaptive feedback control. Overview of application areas. Stability of non-linear systems and hyperstability approach to the design of adaptive controllers. Passivity concept and Liapunov stability. Design of model reference adaptive systems, self-tuning regulators, stochastic adaptive, and dual control systems. Computer-based design applications. Emphasis is placed on design projects. Prereq: ELEC 4136 or 4276. Cross-listed with ELEC 4466. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276.

ELEC 5474 - Power Electronics Laboratory (1 Credit)

The power electronics laboratory introduces students to seven fundamental switchmode power conversion topologies, along with voltage and current feedback control, assembled on a reconfigurable power pole circuit board with external power supplies and laboratory. Cross-listed with ELEC 4474. Max Hours: 1 Credit.

Grading Basis: Letter Grade

ELEC 5476 - Optimal Control Systems (3 Credits)

Liapunov stability and quadratic optimal control problems. The minimum principle and the Pontryagin maximum principle. Variational calculus and Hamilton-Jacoby-Bellman equation. The separation principle of LQG control. Combined optimal state estimation and control. Differential and difference Riccati equations. Tracking and disturbance rejection. Computer-aided design applications. Prereq: ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4136 or ELEC 4276 or Graduate Standing

ELEC 5486 - Modeling and System Identification (3 Credits)

Linear time-invariant and time-varying models. Nonlinear state space models. Non-parametric methods. Parameter estimation methods. Convergence and consistency. Computational methods in estimation. Recursive estimation methods. Experiment design and choice of identification criterion. Model structure selection and model validation. Prereq: ELEC 3817 or MATH 3800, and ELEC 4136 or 4276. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Pre-req: (ELEC 3817 or MATH 3800) AND (ELEC 4136 or 4276) OR Graduate Standing

ELEC 5496 - Robust Control (3 Credits)

Background mathematics: function spaces and operators, and factorization theory. Stability theory: stability and stabilizability parameterization, closed-loop transfer matrices. Model-Matching Theory: solution existence, SISO Design, the Nehari problem. Performance bounds. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5501 - Microprocessor-Based Design (3 Credits)

Covers advanced treatment of embedded system design using microprocessors. Analog input circuitry is interfaced to a microprocessor, and a PC board layout is created to develop a complete system design. Software/Operating System is implemented for realtime I/O. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4501. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5511 - Hardware-Software Interface (3 Credits)

Computer engineering methods in hardware and software design applied to problems drawn from the mini- and micro-computer systems field. Hardware and software techniques for the design of combined hardware or software are developed. Interface and real-time programming techniques are considered. Graduate level requires additional projects and homework. Prereq: ELEC 3520. Cross-listed with ELEC 4511. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3520.

ELEC 5521 - Design and Test of Digital Systems (3 Credits)

Application of hardware description languages to the design, synthesis, analysis, and testing of digital and computer systems; modeling and simulation constructs; modern hardware description languages, including VHDL, logic and behavioral synthesis; rapid-prototyping; FPGA and standard-cel ASIC design; design for testability; and electronic design automation. Prereq: ELEC 3651 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3651 or Graduate Standing

ELEC 5522 - VLSI Systems (3 Credits)

Examines the design of very large-scale integrated (VLSI) systems from the logic to physical levels, including MOS transistor design, CMOS fabrication and design rules, device and wafer processing, inverter and complex gate design, mask level layout, VLSI system components and architectures, algorithms for VLSI computer-aided design, and testability. Prereq: ELEC 3215 and 3651 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Pre-req: (ELEC 3215 and 3651) or Graduate Standing

ELEC 5551 - Pattern Recognition (3 Credits)

Pattern recognition techniques from image processing and artificial intelligence are explored. Topics include neural networks, morphological processing, wavelets, fractals, and basic image understanding. Prereq: ELEC 3316 and 3651. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3651) or Graduate Standing

ELEC 5555 - VLSI Circuit Simulation (3 Credits)

Computer methods for large integrated circuits. Theory and practice of VLSI circuit simulation. Nodal formulations of networks. Computer generation of sensitivities. Modeling active devices. DC solution of nonlinear networks. Prereq: Graduate standing or permission of instructor. Cross-listed with ELEC 4555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5617 - Random Processes for Engineers (3 Credits)

Probability, sequences of random variables, specification of stochastic processes, stationarity, correlation functions and spectral densities, linear mean-square estimation, central limit theorems, law of large numbers, non-stationary random processes, stochastic differential equations and Karhunen-Loeve expansion, Kalman filtering. Prereq: ELEC 3316 and ELEC 3817 and permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5627 - Stochastic Point Processes (3 Credits)

Presents modeling physical phenomena characterized by highly localized events distributed randomly in a continuum. Applications include optical communications, queuing theory, decision theory, nuclear medicine and electron microscopy. Topics include Poisson counting processes and its generalizations; stochastic differential equations used in filtering; martingales and Brownian motion. Prereq: ELEC 3817 or ELEC 5617. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3817 or 5617

ELEC 5637 - Digital Signal Processing (3 Credits)

Discrete-time signals and systems in the time and frequency domain. Digital filter structures, design of FIR filters by windowing, optimum approximations of FIR filters. Design of digital IIR filters from continuous time domain. Computer-aided design of digital filters. The discrete Fourier transform and DSP algorithm implementation. Analysis of finite word length effects. Application of digital signal processing. Prereq: ELEC 3316 and 3817. Cross-listed with ELEC 4637. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: (ELEC 3316 and 3817) OR Graduate Standing

ELEC 5638 - Digital Image Processing (3 Credits)

Basics of two-dimensional (2-D) systems theory, including 2-D Fourier transform, Z-transform, and difference equations. Design of 2-D filters for image processing applications. Image transforms, including the 2-D FFT, cosine, Hadamard and KL. Image enhancement and restoration techniques. Method of image coding and compression. Prereq: ELEC 3133, 3215, 3225, 3316, 3817 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133, 3215, 3225, 3316, 3817 or graduate standing

ELEC 5644 - Introduction to Biomedical Imaging (3 Credits)

An important component of the recent expansion in biomedical engineering is the area of biomedical imaging. This ELEC 4644/5644 course is an introduction to biomedical imaging systems, not only covering the fundamentals of imaging physics but also the applications of four primary biomedical imaging modalities: X-Ray Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Nuclear Medicine (i.e. PET, SPECT), and Ultrasound Imaging. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4644. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5647 - Adaptive Signal Processing (3 Credits)

Optimal filtering and identification of signal processing models. Martingales and analysis of recursive estimation algorithms. LMS and RLS adaptive filters. Stability, convergence and robustness of adaptive algorithms. Adaptive noise cancellation, time delay estimation and blind equalization. Adaptive differential pulse code modulation, adaptive prediction, adaptive Kalman Filters. Applications and implementation of adaptive algorithms. Prereq: ELEC 5637. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5637

ELEC 5648 - Blind Signal Processing (3 Credits)

Introduction to gradient optimization methods. Introduction to adaptive filtering. Principal component analysis and whitening. Robust and adaptive PCA. Blind SOS parameter estimation and deconvolution. Fundamentals of independent component analysis. Blind equalization of SIMO and MIMO systems. ICA by maximization of nongaussianity. ICA by MLE and minimization of mutual information. Applications and practical considerations. Prereq: Graduate standing. Cross-listed with ELEC 6648. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

ELEC 5657 - Detection and Estimation Theory (3 Credits)

Introduces detection and extraction methods used in signal processing, including decision theory; detection of known and random signals; optimum receiver design; estimation theory; Wiener filtering; Kalman-Bucy filtering; and applications to communication systems. Prereq: ELEC 5617. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5617

ELEC 5667 - Wavelet Theory and Applications (3 Credits)

Topics include: fundamentals of signal decomposition; theory of filter banks; multi-resolution analysis and fast wavelet transforms; applications image and video image and video compression; and denoising and feature detection. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5678 - Quantum Computing (3 Credits)

The course teaches students the principles, the algorithms and the programming methods of quantum computing, and also discusses the associated physics and mathematics background required. Other related topics such as quantum communication and quantum entanglement will also be discussed. Prereq: PHYS 2331 and ELEC 3817 with a C- or better. Cross-listed with ELEC 4678. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PHYS 2331 with a C- or better, and ELEC 3817 with a C- or better.

ELEC 5687 - Optical Communication Systems (3 Credits)

System aspects of optical communication system design. Basic principles of sources, channels, detectors, counting statistics, amplifiers, and coding with regard to the performance limitations they place on the communication system. Prereq: ELEC 3133. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3133 Restriction: Restricted to students within the College of Engineering, Design and Computing

ELEC 5688 - Introduction to Nondestructive Testing (3 Credits)

A basic, broad understanding of the principles of nondestructive testing and evaluation is provided. The main objective of this course is to attract students to NDT fields and eventually help address the increasing needs of NDT engineers and technicians. Interaction and collaboration with local NDT industries will also be emphasized. As an introductory course, a broad interdisciplinary knowledge of NDT will be covered in the following sub-areas: Visual, Penetrant, Magnetic Particle, Eddy Current, Microwave, Ultrasonic, and Radiography. Prereq: Graduate standing, or permission of instructor. Cross-listed with ELEC 4688. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

ELEC 5697 - Optical and Spatial Information Processing (3 Credits)

Processing of two- and three-dimensional spatial information. The scalar diffraction theory necessary to describe the information-bearing wave-front. Wave-front recording, modulations, and reconstruction. Holography, Fourier transform properties of lenses, two-dimensional convolution and correlation, pattern recognition, and optical information processing. Prereq: ELEC 3316. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3316 or Graduate Standing

ELEC 5710 - Advanced Electric Drive Systems (3 Credits)

Covers advanced theory and implementation techniques for rotating electric machinery drives. Topics include field oriented control theory, detailed dynamic modeling of induction machine/drive system, advanced control algorithms and controller design. Prereq: ELEC 4164/5164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5714 - Energy Systems Analysis (3 Credits)

Transmission line constants, including details of GMD methods, skin effect. Analysis of balanced and unbalanced line using distributed parameters, energy flow from circle diagram approach, traveling-wave phenomena, corona, power cables and fundamentals of DC transmission. Prereq: ELEC 4184. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184

ELEC 5720 - Practical Electric Drive Systems (3 Credits)

Covers practical control theory and implementation techniques for electric machine drives for rotating electric machinery using high-performance hardware and software. Topics include machine theory review, power converter, control theory, controller design and actual implementation of an induction machine drive using up-to-date microcontroller hardware and software. Prereq: ELEC 2520, ELEC 4164/5164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5723 - High Performance Computer Architecture (3 Credits)

High Performance Computer Architecture covers the design of advanced computing systems. In particular, the course includes the design of modern microprocessors, characteristics of the memory hierarchy, and issues involved in multithreading and multicore architectures. Prereq: ELEC 3651 Digital Hardware Design. Cross-listed with ELEC 4723. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5725 - Advanced Electric Machinery (3 Credits)

Covers theoretical principles and techniques of electric machine analysis focusing on rotating machinery. Topics include various machine definitions, properties and analysis, software tools, and examples. Prereq: ELEC 3164 or equivalent. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 5727 - Computer Vision & Image Processing Acceleration (3 Credits)

Real-time constraints on computer-vision and image processing applications have motivated numerous explorations of multicore architectures to provide more efficiency through hardware parallelism and acceleration. This course undertakes the study of image processing and computer vision algorithms in the context of parallel hardware. Prereq: ELEC 3520. Cross-listed with ELEC 4727. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 3520.

ELEC 5755 - Renewable Energy Systems (3 Credits)

This course focuses on the modeling, analysis and control of grid-connected wind and photovoltaic energy systems. Prereq: permission of instructor. Cross-listed with ELEC 4755. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5764 - Power Distribution Systems (3 Credits)

Use of per-unit methods to find transient voltage behavior of industrial power systems resulting from motor starting, spotwelders and similar stimuli. System and device responses due to series and shunt capacitors and problems of subharmonics and over-excitation on induction motors. Design of power distribution systems. Prereq: ELEC 4184. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184

ELEC 5774 - Power Systems Dynamics and Protection (3 Credits)

Topics to be covered include: power system dynamic fundamentals, various stability problems, such as angle, frequency and voltage stability; protection of power systems apparatus and protective relays coordination. Prereq: ELEC 4184/5184 or graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 4184 or Graduate Standing

ELEC 5800 - Special Topics (1-3 Credits)

Intermediate courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 5840 - Independent Study: ELEC (1-6 Credits)

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ELEC 5939 - Internship Master Student (1-3 Credits)

Student will outline internship tasks every 2-3 weeks in a progress report. Reports will include the details of exposure to electrical/computer engineering concepts. Each concept will be described with respect to CU Denver Electrical Engineering degree program. Courses that were taken pre-internship that prepared student for successful understanding for the task requirements. In addition, preparations that would be help, will also be mentioned. Engineering training in design and software tools related to internship tasks will be clearly described. Final semester report will describe all experiences and include recommendations on how students might prepare to be successful for other common tasks. Requisite: Graduate students must have completed 6 credit hours with a cumulative GPA of 3.0. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Graduate students must have completed 6 credit hours with a cumulative GPA of 3.0.

ELEC 5980 - Statistical Quality Control (3 Credits)

Introduces statistical methods of quality control. Statistical process control, process capability, statistical design of experiments and total quality management. Prereq: Graduate standing or permission of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

ELEC 6000 - Statistical Signal Processing (3 Credits)

The objective of this course is to present a systematic coverage of statistical signal processing methods which are fundamental for processing, identifying and classifying stochastically (randomly) generated data sequences. Emphasis will be given to methods which resist data outliers. Important applications include communications and biological systems. Prereq: ELEC 5617 or consent of instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ELEC 5617

ELEC 6800 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 6950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

ELEC 6960 - Master's Report (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

ELEC 7800 - Special Topics (1-3 Credits)

Courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7801 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7802 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7803 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7804 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7805 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7806 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7807 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7808 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7809 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ELEC 7840 - Independent Study: ELEC (1-6 Credits)

Offers the opportunity for independent, creative work. Prereq: Permission of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ELEC 8990 - Doctoral Dissertation (1-10 Credits)

Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Engineering (ENGR)

ENGR 5150 - Seminar: Special Topics in Engineering (1 Credit)

A flexible seminar format dealing with topics of special interest in engineering on a graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 7150. Max Hours: 1 Credit.

Grading Basis: Pass/Fail Only

Restriction: Restricted to graduate students

Typically Offered: Fall, Spring.

ENGR 5208 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ENGR 5301 - Systems Engineering: Principles and Practice (3 Credits)

Max Hours: 3 Credits.

Grading Basis: Letter Grade

ENGR 5302 - Systems Engineering: Planning and Management (3 Credits)

Max Hours: 3 Credits.

Grading Basis: Letter Grade

ENGR 5303 - Special Topics: Systems Engineering (3 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ENGR 5800 - Long Range Infrastructure Planning and Design: Colorado 2050 (3 Credits)

The goal of this course is to equip students to address the problems of long term future resource limitation and its influence on urban infrastructure in Colorado. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ENGR 7150 - Seminar: Special Topics in Engineering (0.5 Credits)

A flexible seminar format dealing with topics of special interest in engineering on an advanced graduate level. Topics vary from semester to semester. Prereq: Graduate standing. Cross-listed with ENGR 4150 and 5150. Repeatable. Max Hours: 1 Credit.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 1.

Restriction: Restricted to graduate students

Typically Offered: Fall, Spring.

English (ENGL)

ENGL 5000 - Studies of Major Authors (3 Credits)

An intensive study of works of one major British or American author.

Examples: Dickens, Woolf or James. Prereq: Graduate standing. Cross-listed with ENGL 4000. Term offered: fall, spring. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5001 - Special Topics (1-6 Credits)

This variable credit course offers intensive study of the teaching of writing in a collaborative action-oriented approach. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5080 - History of the English Language (3 Credits)

Examines how English has changed since A.D. 800 through examples of writing from different periods, with attention to the way various groups have enriched our vocabulary and altered our syntax. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5093 - Teaching of Writing (3 Credits)

Deals with the analysis of rhetorical theory with an emphasis on practical applications in the classroom, with attention to alternative pedagogies in teaching. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5100 - Introduction to Graduate Studies (3 Credits)

Introduces students to scholarly methods & key debates in English Studies. Familiarizes students with department's specializations in film, linguistics, literature & rhetoric. Offers new MA students training in the primary forms of scholarly writing within the discipline (journal article, conference abstract, synopsis, book review). Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5110 - Denver Writing Project (3-9 Credits)

An intensive extended workshop in the development of one's personal and professional writing and in the teaching of writing. Open to those who are members of the Denver Writing Project. Prereq: Graduate standing. Term offered: summer. Max hours: 9 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5120 - Denver Writing Project Advanced Institute (1 Credit)

Advanced institutes provide intensive examination of an issue related to the teaching of writing. The specific issues are of two kinds—repeatable ones such as "Alumni Institute" and "Writing Retreat" and variable, such as "Action Research" and "Writing Across the Curriculum." Prereq: Graduate standing. Term offered: summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5135 - English Language Study (3 Credits)

Introduces students to varieties of English in use today, while tracing range of "new Englishes" back to origins of language. Students will develop an understanding of English as a global language, why it spread throughout the world and how, paying specific attention to print history of English and relationship to other print languages. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5140 - Special Topics with NWP (3 Credits)

This online University of Colorado Denver English Department and Denver Writing Project course will focus on teaching argument writing to grades 3 - 12+ with the National Writing Project's College, Career, and Community Writers Program. Coursework will provide participants the opportunity to engage in the study of researched-based pedagogy for the teaching of evidence-based argument writing while nurturing themselves as writers. Term offered: irregular. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENGL 5145 - Theory (3 Credits)

Designed to enrich students' understanding of a variety of modes of theoretical discourse that have influenced modern critical practice in English studies. While the course explores the evolution of criticism, it gives primary emphasis to recent developments. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5150 - Research Methods (3 Credits)

Designed to prepare students for graduate scholarship in language, literacy, and the teaching of writing; should be taken soon after entering the program. Introduction to the research methods and stylistic standards for graduate-level writing. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5155 - Genres of Writing (3 Credits)

Explores work of major contributors to genre and narrative theory. Offers students exposure to emergent genres in new media, while situating these new genre in relation to historical precedents. Gives students an introduction to the evolution of central genres in literary studies, such as novel, poem, political speech and western film. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5160 - Poetics (3 Credits)

"Mechanics" of poetry in English, including meter, rhythm, rhyme, line, and other systems of measurement and logic. Emphasis is on historical development of poetic art in English. Note: this course assumes that students have completed ENGL 1400. Prereq: Graduate standing. Cross-listed with ENGL 4160. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5165 - Literacy and Technology (3 Credits)

Studies the material forms in which English language has circulated-e.g., the history of the oral and manuscript tradition; the history of the book; and the impact of digital technologies on print culture. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5166 - History of American Poetry (3 Credits)

Examines major American poets and poetic trends from the colonial period to the present, with attention to cultural contexts and to development of distinctively American practices. Cross-listed with ENGL 4166. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5171 - Language Theory (3 Credits)

Introduces linguistic theory to the beginning graduate student. Builds upon the material included in the undergraduate class, by adding materials pertaining to the teaching of writing and graduate language studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5175 - Writing in the Sciences (3 Credits)

Provides rhetorical analyses of scientific discourse and student practice in writing research reports and proposals. Restriction: Restricted to students at the graduate level (including non-degree and Anschutz Medical Campus programs). Cross-listed with ENGL 4175. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students at the graduate level (including non-degree and Anschutz Medical Campus programs).

ENGL 5177 - Technical Editing (3 Credits)

Provides instruction in the conventions of editing in the genre of technical communication. Students develop skills they can use to edit a variety of technical documents. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with ENGL 4177. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5190 - Advanced Topics in Writing & Digital Studies (3 Credits)

Focuses on particular issues in rhetoric and writing as they pertain to reading and writing, including language and gender, language and culture, and language of political action. Cross-listed with ENGL 4190. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5200 - Survey of the English Novel to 1900 (3 Credits)

Rise and development of the English novel from its beginnings in the 18th century through the end of the 19th century, including such writers as Defoe, Fielding, Austen, Shelley, the Brontes, Thackeray, and Dickens. Cross-listed with ENGL 4200. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5210 - History of the English Novel II (3 Credits)

Overview of the English novel from mid-19th century to World War II, emphasizing the important developments which the form underwent in the hands of notable novelists, including Charles Dickens, the Brontes, George Eliot, Henry James, Joseph Conrad, D.H. Lawrence and Virginia Woolf. Cross-listed with ENGL 4210. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5220 - African-American Literature (3 Credits)

Surveys African-American literature with special emphasis on post-Civil War writing. Cross-listed with ENGL 4220, ETST 4220 and ETST 5220. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5230 - The American Novel (3 Credits)

Surveys major developments in the American novel from the 18th century to the 21st century. Cross-listed with ENGL 4230. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5235 - Faulkner (3 Credits)

Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Cross-listed with ENGL 4235. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5236 - The American Short Story (3 Credits)

Traces the development of the short story in the United States, from its beginnings in colonial tales to its contemporary renaissance as a dominant literary form. Cross-listed with ENGL 4236. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5240 - Topics In Contemporary American Literature (3 Credits)

Seminar focusing on a segment of contemporary American literature. Cross-listed with ENGL 4240. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA).

ENGL 5250 - Twentieth Century Fiction (3 Credits)

Deals with novels originating in a variety of countries in an effort to see the similarities and differences that varying nationalities bring to the genre. Cross-listed with ENGL 4250. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5280 - Proposal and Grant Writing (3 Credits)

Focuses on research, design, composition, and editing original proposals. Includes idea development, identification of funding sources, and the creation of persuasive documents. Prereq: Graduate standing. Cross-listed with ENGL 4280. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5300 - History of British Drama (3 Credits)

Intended as a survey of British drama from the miracle plays of the medieval period, through the Renaissance and Restoration, to the "kitchen sink" realists of the 1960s. Cross-listed with ENGL 4300. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5306 - Survey of Feminist Thought (3 Credits)

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, HIST 4306, 5306, WGST 4306, 5306. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5308 - Contemporary Feminist Thought (3 Credits)

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Prereq: Graduate standing. Cross-listed with ENGL 4308, PHIL 4308, PHIL 5308, WGST 4308, WGST 5308. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5320 - History of Poetry in English (3 Credits)

Studies the major schools and eras of English prosody, including the poetry of Great Britain and the United States, from the medieval period to the present. Cross-listed with ENGL 4320. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5350 - History of American Drama (3 Credits)

Studies American drama from its foundations in the 18th century through movements including realism, expressionism, symbolism, agit-prop, black nationalism, feminism, and performance art. Drama read as both text and performance, as sometimes supporting the status quo and as sometimes subverting it. Cross-listed with ENGL 4350. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5400 - Old English I (3 Credits)

Instruction in the Old English language. Note: this course assumes that students have completed ENGL 2070 or one year of college level coursework in a foreign language. Prereq: Graduate standing. Cross-listed with ENGL 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5410 - Old English II: Beowulf (3 Credits)

Continuing training in the reading of Old English and intensive reading of Beowulf. Note: this course assumes that students have completed ENGL 4400 or 5400. Prereq: Graduate standing. Cross-listed with ENGL 4410. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5420 - Film Theory and Criticism (3 Credits)

(1) Familiarizes students with some of the central concepts and debates in film theory and criticism, both classic and contemporary, (2) enables students to develop advanced analytic and interpretive skills, and (3) guides students toward discovering and articulating original critical and theoretical perspectives. Note: this course assumes that students have completed ENGL 2250, 3070, and 3080 or equivalent. Prereq: Graduate standing. Cross-listed with ENGL 4420. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5460 - Contemporary World Literature (3 Credits)

Surveys literature written by world writers since World War II. Note: Texts read in English. Cross-listed with ENGL 4460. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5500 - Medieval Literature (3 Credits)

Introduces representative writers from the Norman Conquest to about 1550. Emphasis on a variety of genres, including religious poetry, Arthurian romance, dream vision and drama. Cross-listed with ENGL 4500. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5510 - Whores and Saints: Medieval Women (3 Credits)

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Note: this course assumes that students have completed at least 9 hours of literature coursework. Prereq: Graduate standing. Cross-listed with ENGL 4510, RLST 4730/5730, WGST 4510/5510. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5520 - English Renaissance (3 Credits)

Introduces some of the important writers in this major period of English literature (1500-1660). Special attention to the works of Sidney, Milton, Spenser, Shakespeare, Donne, Herbert and Johnson. Cross-listed with ENGL 4520. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5530 - Milton (3 Credits)

Extensive reading in John Milton's poetry (Lycidas, Paradise Lost, Paradise Regained, Samson Agonistes) as well as his political, social and theological writings. Cross-listed with ENGL 4530. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5540 - Restoration and the 18th Century (3 Credits)

Introduces some of the important writers of the "Age of Reason." Emphasis on such figures as Bunyan, Burke, Dryden, Johnson, Pope and Swift. Cross-listed with ENGL 4540. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5560 - English Romanticism (3 Credits)

Studies major works of the chief English writers of the first part of the 19th century, with emphasis on such representative figures as Wollstonecraft, Godwin, Blake, Wordsworth, Coleridge, Hazlitt, Byron, Keats and Shelley. Cross-listed with ENGL 4560. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5580 - The Victorian Age (3 Credits)

Examines the main currents of Victorian thought in prose and poetry from about 1830 to the end of the century, including such writers as Browning, Carlyle, Mill, Newman, Ruskin, Swinburne and Tennyson. Cross-listed with ENGL 4580. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5600 - Modernism (3 Credits)

Modernist literature from the beginning of the 20th century through World War II, including such writers as Eliot, Joyce, Forester, Ford, Yeats, Woolf and Barnes. Examines the social-political influences as well as the aesthetic and stylistic elements which define modernist writing. Cross-listed with ENGL 4600. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5601 - Principles and Practices of Second Language

Acquisition (3 Credits)

Overview of basic principles and practices in the learning and teaching of English as a second language. Cross-listed with ENGL 4601. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5610 - Narrative: Form and Theory (3 Credits)

A critical and theoretical exploration of the elements of narrative -e.g., plot, character, dialogue, discourse-in literature and film. This course is especially useful for fiction-writing students in the Creative Writing Track. Prereq: Graduate standing. Cross-list ENGL 4610. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5650 - American Literature to the Civil War (3 Credits)

Graduate survey of American literature from the Colonial period to the Civil War, with particular attention to the question of what makes this literature distinctly American. Explores a wide range of genres of American literature in an effort to assess how this tradition of letters shaped our historical past and continues to influence contemporary American culture and ideology. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5651 - Second Language Writing (3 Credits)

Topics include the similarities between first and second language writing, the processes of composition and revision, teacher response to student writing, student processing of feedback, writing assessment, and the reading or writing connection. Cross-listed with ENGL 4651. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5655 - American Literature: Civil War to the Cold War (3 Credits)

Graduate survey of American literature from the Civil War to the Cold War considered central to the tradition of American literature. Students will consider how new ideas about gender, race, class, nationality, postcoloniality, history, and aesthetics have influenced the field of American literary studies. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5730 - Chaucer (3 Credits)

Extensive reading in Chaucer's works in Middle English, including his lyrics, dream visions, Troilus and Criseyde, and the Canterbury Tales. Examines sources, historical and ideological factors influencing the texts. Prereq: Graduate standing. Cross-listed with ENGL 4730. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5735 - Philosophy and Literature (3 Credits)

Considers the philosophical dimensions of literature. Cross-listed with ENGL 4735, PHIL 5730, 4730. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5745 - Humanistic Writing About Medicine and Biology (3 Credits)

Investigates medical and biological writing over the last two centuries with an emphasis on reception, ethical issues, and the differences between professional and popular writing. Prereq: Graduate standing. Cross-listed with ENGL 4745. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5755 - Illness & Disability Narrative (3 Credits)

Narratives of mental, chronic or terminal illness, and disability have become common over the past decades. There are a number of ways in which these stories are told by those reflecting on their experiences: individuals choosing to tell such stories must consider how their stories will be received and what they are revealing about themselves in dealing with their conditions. Many issues arise when looking at the production and reception of these narratives, including acceptance and assimilation, stigmatization, access and quality of treatment, discrimination, accommodation, pity and stereotyping responses. These narratives are consumed, usurped, and reacted to by clinicians, communities and society at large with their own agendas, expectations, fears and judgments of the stories and of the individuals telling their stories. This course is about the issues and concerns of producing an illness or disability narrative and the consumption/reception of those narratives by health professionals, communities, and society at large. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross listed with ENGL 4755. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5770 - Topics in English: Film and Literature (3 Credits)

May look at specific genres, aesthetic approaches to literature, ideological or socio-political agendas, or other special topics in literature and/or film. Prereq: Graduate standing. Cross-listed with ENGL 4770. Term offered: spring, fall. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5840 - Independent Study: ENGL (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5913 - Practicum in Language and Rhetoric (1-3 Credits)

Supervised work in applied language or rhetoric and the teaching of writing. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 5939 - Internship (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6010 - Studies of Major Authors (3 Credits)

Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6110 - Special Topics in Literature (3 Credits)

An intensive study of specialized topics in English and/or American literature. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 30.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6120 - Special Topics in Film (3 Credits)

An intensive study of specialized topics in film. Note: May be repeated when topics vary. Prereq: Graduate standing. Repeatable. Max Hours: 30 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 30.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6840 - Independent Study (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6920 - Directed Readings (3 Credits)

Offers graduate student's instruction on an individual basis. Serves as preparation for the MA (literature) comprehensive examination. Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENGL 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENGL 6960 - Master's Project (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENGL 6970 - Portfolio Exam (3 Credits)

In the portfolio exam, students prepare the culminating document of students' MA work, a portfolio combining reflection on work done at CU Denver with a forward look at students' career goals. Prereq: Graduate standing. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Entrepreneurship (ENTP)

ENTP 5939 - Internship/Cooperative Education. (3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

ENTP 6020 - Business Model Development & Planning (3 Credits)

Jointly taught by a successful Colorado entrepreneur and an experienced professor, this course familiarizes students with the key steps for preparing a business plan for a new (or existing) business venture.

This course provides real-world feedback and advice and integrates coursework with THE CLIMB | Jake Jabs Business Plan Competition events to further enhance the quality of one's business concept. Several past students have won prizes at THE CLIMB and launched successful businesses from concepts developed in the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6022 - Digital Strategy for Entrepreneurs (3 Credits)

This course focuses on how digital innovations are disrupting traditional business practices. Students will participate in a team project where they identify an industry prepared for disruption, and then develop a relevant digital strategy. Students can also expect industry leaders from some of Colorado's greatest digital and tech companies as guest speakers. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6028 - Global Study Topics (3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, INTB 4028, and INTB 6028. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6030 - Entrepreneurship in Emerging Industries (3 Credits)

How entrepreneurs in emerging industries raise capital, find talent, attract customers, manage regulatory uncertainty, and respond to opposition. Focus on blockchain tech, renewable energy, fracking, and sharing economy, we will discuss the challenges and opportunities facing entrepreneurs pioneering new/controversial products and practices. We will also examine how these lessons generalize to innovation in other industries. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6100 - Digital Advertising for Entrepreneurs (1.5 Credits)

This course explores current trend in digital advertising that affect the industry today, especially small businesses. All of these concepts are critical to an entrepreneur who is attempting to launch a business. We will explore advertising in social media advertising, display advertising and affiliate marketing for entrepreneurs. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

ENTP 6110 - Innovation in Fintech (1.5 Credits)

The class has four focus areas. The first covers the fields in which fintech is operating, such as financial education, crypto currency, retail banking and investment. The second examines examples of fintech, including trading apps, peer-to-peer lending and robo-advisors. The third analyzes the four types of users. The fourth is about fintech innovations in machine learning and AI. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

ENTP 6420 - Ethics: Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6620 - New Venture Operations and Project Management (3 Credits)

Many viable businesses have failed due to cash flow problems, poor management, and poor execution. This course presents students with an operations model for developing internal and external plans when starting new ventures. Utilizing both academic fundamentals and practical knowledge imparted by an experienced instructor, this course provides the project management knowledge and skills needed to build strong operation plans. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

ENTP 6644 - Impactful Social Innovation (3 Credits)

Innovations in social organizations are unique and warrant equally unique startup strategies for success. This course takes students through various stages of the social enterprise development process, from building competitive business models to attracting investors to operationalizing the business concept successfully while simultaneously doing social good. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

ENTP 6800 - Special Topics in Entrepreneurship (3 Credits)

A variety of topics in entrepreneurship are offered. Consult the current 'schedule Planner' for semester offerings. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

ENTP 6801 - Building Biotechnology (3 Credits)

This course teaches students the fundamentals of life science technology in entrepreneurship. Serving as an introduction to bioinnovation and entrepreneurship, topics covered include tech transfers, accounting and finance basics, opportunity assessments, legal and regulatory environments, clinical trials, project management best practices, ethics and societal issues, and team building. Cross-listed with IDPT 6301. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

ENTP 6802 - Regulatory Environment of Life Science Innovation (3 Credits)

This course is designed to familiarize graduate-level engineering, business, law and life science students with the fundamentals of life science technology commercialization including drugs, devices, diagnostics, and healthcare IT and platform applications. Cross-listed with IDPT 7302. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

ENTP 6807 - Personal Branding (3 Credits)

This course is designed to show students how to create successful personal brand strategies for professional and personal development in both entrepreneurial and intrapreneurial environments. The course work will demonstrate the imperative link between marketing and personal branding through case studies, projects, guest speakers and reading materials. Students will also leave the course knowing how to develop and implement a personal branding plan. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Summer.

ENTP 6822 - Legal and Ethical Issues of Entrepreneurship (3 Credits)

This course addresses the legal issues most frequently encountered by entrepreneurs and others involved in startups and small, closely held or family businesses. The focus is on how to avoid legal problems and how best to cope when they arise. Topics include choice of business form, legal aspects of raising capital, taxation, intellectual property law, employment law, product liability, e-commerce and the problems of managing lawyers and litigation. Note: Cannot receive credit for both BUSN 6540 and this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6824 - Entrepreneurial Financial Management (3 Credits)

This course provides a foundation for the financial management of an entrepreneurial business. Topics covered include differentiation from traditional corporate financial management assumptions, financial aspects of setting up a business, and how to create, evaluate, forecast, and analyze future financial statements. Students will examine theoretical and practical valuation techniques, considerations for buying versus starting a business and franchising. The course also discusses different choices for financing a new business, venture capital, angel financing, crowd funding, private equity and security laws, harvesting alternatives, and financial distress turnaround considerations. Cannot receive credit for both FNCE 6460 and this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6826 - International Entrepreneurship (3 Credits)

This course focuses on the intersection of international business and entrepreneurship. Topics addressed include international entrepreneurship theory and practice (opportunity identification, processes and route to market). This course also highlights new topics in international entrepreneurship such as digital globalization and new technologies driving international entrepreneurship (blockchain and the global supply chain). Leading practitioners and entrepreneurs will be facilitating these modules. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6834 - Lean Marketing (3 Credits)

This course teaches students how to create successful marketing strategies in entrepreneurial environments where resources are often limited and negative outcomes can be unforgiving. The course work will demonstrate the imperative link between the fundamental marketing principles and entrepreneurial lean marketing guiding principles through real-life case studies, project, videos, podcasts and reading materials. Student will leave this course understanding how to develop an effective and pragmatic marketing plan for an entrepreneurial venture. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6840 - Independent Study: ENTP (3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ENTP 6842 - New Concept Development (3 Credits)

This course provides insights and tools that will help students assess the viability of new business concepts (a.k.a. those in the very early stages of development). Unlike the "business plan" course where students create an actual plan, this course will help students determine if a new business concept is truly worthy of a business plan. The main objective of the course focuses on understanding problems and solutions from the potential market's perspective. The value of the problem-solution approach is that it quickly gets to the reason why people buy things: to solve perceived problems. Along the way students will employ various experiential and theoretical learning aids to investigate a series of relevant topics such as product markets, new business concepts and entrepreneurial risk-taking. Max hours: 3 Credits.

Grading Basis: Letter Grade

ENTP 6848 - Leadership in New Ventures (3 Credits)

This course provides students with an overview of key leadership principles for creating strategy and managing teams in a startup environment. It introduces leadership concepts critical to gaining true organizational commitment and focuses on case studies relevant to common business issues. By exploring what entrepreneurial leaders actually do and how visionary leadership is required to develop an organization, students will learn how to execute these concepts through measurable goals and objectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

Environmental Sciences (ENVS)

ENVS 5010 - Landscape Biogeochemistry (3 Credits)

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Note: this course assumes that students have completed an introductory college-level physical geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4010/GEOL 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5020 - Earth Environments and Human Impacts (3 Credits)

Basic concepts describing earth's biomes and physical environment are presented in a systems context. Global warming assessment, from both political and scientific perspectives, is then presented. Model visualization of these concepts to consider human impacts on Earth's biomes is discussed. Earth system viewpoint, having links of Earth's biomes to oceans and atmosphere, completes the course discussion. Cross-listed with GEOG 4020, GEOL 4020. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5030 - Environmental Geology (3 Credits)

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5280 - Environmental Hydrology (4 Credits)

Examination of hydrologic processes in relation to climate, soils, vegetation, land-use practices, and human interactions. Natural scientific perspectives emphasized; field and laboratory included. Note: this course assumes that students have completed GEOG 1202 and one of: 1) GEOG 3232; 2) GEOG 4240/GEOL 4240/GEOG/5240; 3) GEOG 4010/GEOL 4010/ENVS 5000. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5300 - Children's Geographies (3 Credits)

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 4300. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5305 - Water Quality and Resources (3 Credits)

Introduces water resources aimed at students with little or no background in the field. This is a broad course covering topics ranging from the physical aspects of water to water politics and international law. While the course is largely a lecture format, discussion of current issues is a significant part of the class. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with GEOG 4305. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5340 - Equity & Culture in Science Education: Local/Global (3 Credits)

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 5340 and SCED 4340. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5380 - Anthropocene Futures (3 Credits)

We are living in the "Anthropocene"—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity's intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth's evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a "good" Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4380, GEOG 5380, and ENVS 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5403 - Unsaturated Zone Hydrology (3 Credits)

Focuses on water and contaminant transport through the unsaturated zone, infiltration and drainage, and heat and gas transport. Students learn to design, perform field installation, and collect data in order to model and predict contaminant movement on/off site. Note: this course assumes that students have prior coursework in chemistry, physics, or calculus. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5410 - Aquatic Chemistry (3 Credits)

Course objectives are to: (1) identify and understand chemical and physical principles and processes that control the composition of natural water, (2) prepare students to critically evaluate scientific literature and experimental design related to water quality and environmental remediation, and (3) examine the validity of environmental water data.

Note: this course assumes that students have completed general chemistry and/or CHEM 4700. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5450 - Urban Food and Agriculture: Perspectives and Research (3 Credits)

Provides an overview of research & practices in urban farming. Critically reviews emergent models of local food production/distribution. Compares new practices to traditional agribusiness. Assesses the prospects for solving sustainability problems within the modern agro-food system. Note: this course assumes that students have completed GEOG 3401. Prereq: Graduate standing. Cross-list GEOG 4450. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5460 - Sustainable Urban Agriculture Field Study I (3 Credits)

Provides a field-based overview of urban farm planning & management. Topics: range/land conservation, native/invasive species, water distribution, animal husbandry, government interaction, local markets, community relations, conservation easements and issues pertaining to urban farming. Note: this course assumes that students have completed ENVS 5450. Prereq: Graduate standing. Cross-list GEOG 4460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5470 - Sustainable Urban Agriculture Field Study II (3 Credits)

Provides a field-based overview of current practices in local agricultural production. Emphasis will be placed on sustainable practices and their most efficient situation, Special consideration will be given to plausible solutions for food insecure communities both local and global. Note: this course assumes that students have completed ENVS 5450 and 5460. Prereq: Graduate standing. Cross-listed with GEOG 4470. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5480 - Urban Vegetable CSA: Planning, Production&Distribution (3 Credits)

This course outlines the planning, production, and distribution in an active urban vegetable CSA (community supported agriculture) model. It is offered as a part of the GES Sustainable Urban Agriculture Certificate. Cross-listed with GEOG 4480. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5500 - Topics in Environmental Sciences (1-6 Credits)

Topics may vary from one offering to the next. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5600 - Applied Statistics for the Natural Sciences (3 Credits)

Surveys statistical techniques including: quick review of basic statistics, tests for normality and outliers, display of data; simple and multiple regression; ANOVA and its relation to regression. Emphasis on computer or stat-pak analysis and interpretation of statistical results. Note: this course assumes that students have completed college algebra and GEOG 3080 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4770. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5620 - Health Risk Communication (3 Credits)

Acquaints students with contemporary theory, research, and practice in health risk communication. Cross-listed with COMM 5620/4620 and PBHL 4620. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5650 - Environmental Education (3 Credits)

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Prereq: Graduate standing. Cross-listed with ENVS 4650 and SCED 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5700 - Synthesis for Interdisciplinary Science (3 Credits)

Synthesis is an approach in interdisciplinary research and education that links ideas, data and methods. This course develops synthesis skills through the lens of systems theory. It includes exercises for synthetic thinking, examination of integrative tools, and a service-learning project. Cross-listed with GEOG 4700. Breadth and depth training in environmental sciences. Interest in interdisciplinary collaboration. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-list GEOG 4720/ GEOG 5720/ ENVS 4720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5730 - Air Quality Modeling and Analysis (3 Credits)

Emphasizes the use of air dispersion modeling tools. Topics include: sources and effects of air pollution, use of the WWW, and analysis of modeling results. Note: For graduate students in environmental sciences or engineering, and for those working in the environmental field. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5731 - Mountain Biogeography (4 Credits)

This course utilizes the close proximity of the Rocky Mountains to examine altitudinal influences on species distributions. Topics include species patterns and distributions, disturbance, climate impacts, forest management and sustainability. Note: Please add this course note: A three-day field trip within Colorado will occur the first weekend of the Fall semester, and is highly encouraged. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with GEOG 5731. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, GEOG 5740, ENVS 4740. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4750, GEOG 5750, and ENVS 4750. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5840 - Independent Study: ENVS (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

ENVS 5850 - Understanding and Communicating Field Methods (3 Credits)

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with ENVS 4850 and GEOG 4850/5850. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ENVS 5900 - Colloquium (1 Credit)

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Graduate standing. Cross-listed with ENVS 4900, GEOG 4900 and 5900.

Repeatable. Max Hours: 4 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 4.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ENVS 5992 - Advanced Regional Field Study (1-6 Credits)

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Cross-listed with ENVS 4992, GEOG 4992, GEOG 5992. Note: Instructor permission required. Repeatable. Max Hours: 12 Credits.

Grading Basis: GRD

Repeatable. Max Credits: 12.

ENVS 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with ENVS 4995, GEOG 4995, and GEOG 5995. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6000 - Environmental Sciences Seminar (1 Credit)

Student and faculty presentations of UCDHSC research projects and other current environmental sciences topics. All environmental sciences students are encouraged to attend, but credit is given only to students who present seminars. Two semesters of this course are required to receive a M.S. in Environmental Science degree: these students must register for this seminar and give presentations the first semester they are in the M.S.E.S. program and the semester in which they defend their master's project. Prereq: Graduate standing. Term offered: fall.

Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 2.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6002 - Research Topics in Environmental Sciences (3 Credits)

Introduces research and professional development in the environmental sciences, focusing on current issues and trends in the field, methods of developing research and project proposals, and defense of a proposal written during the semester. Students are introduced to the environmental sciences faculty and their research programs. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6004 - Research Methods in Environmental Science (3 Credits)

This core MS Environmental Science course will explore a range of methods commonly encountered in environmental science fields and how to develop a research project and proposal. Prereq: ENVS 6002. Restriction; Restricted to graduate-level students. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: ENVS 6002 Restriction; Restricted to graduate-level students.

ENVS 6100 - Research Topics in Environmental Management (3 Credits)

This is one of 4 core MS Environmental Science courses that will review and apply the principles and methods involved in designing and implementing effective environmental management. Prereq: Must be graduate level and have completed ENVS 6002. Max hours: 3 Credits. Grading Basis: Letter Grade
Prereq: ENVS 6002 Restriction; Restricted to graduate-level students.

ENVS 6200 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Cross-listed with CVEN 5494, HBSC 7340. Prereq: Graduate standing. Max hours: 3 Credits. Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6210 - Human Health and Environmental Pollution (3 Credits)
Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution. Cross-listed with HBSC 7210. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6220 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Note: this course assumes that students have completed one year of college chemistry and one year of college biology. Prereq: Graduate standing. Cross-listed with HBSC 7360. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6230 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Note: this course assumes that students have completed a basic statistics course. Prereq: Graduate standing. Cross-listed with HBSC 7310. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6800 - Community-Based Research Practicum (3 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prereq: ENVS 6002 with a grade of C or higher. Cross-listed with GEOG 6800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ENVS 6002 with a C or higher.

ENVS 6840 - Independent Study: ENVS (1-3 Credits)

Prereq: Graduate standing. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 11 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 11.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENVS 6960 - Master's Report (3-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Ethnic Studies (ETST)

ETST 5000 - Research Methods in Ethnic Studies (3 Credits)

Emphasizes the acquisition of a variety of data or information collection and analytic skills, especially those applicable to historical and social inquiry in ethnic studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4000. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5020 - Race, Culture and Immigration (3 Credits)

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Graduate standing or instructor permission. Cross-listed with SOCY 4020, ETST 4020 and SOCY 5020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5021 - Black and Latino Children in Families and Schools (3 Credits)

With a focus on application of scholarship to practice, this interdisciplinary course will introduce graduate students to scholarly literature from family sciences, sociology, education and related fields to understand Black and Latino children within family, school and community systems. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HDFR 5020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5030 - Race, Religion and Belonging in the United States (3 Credits)

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging in the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources #such as sermons, reality TV shows, court cases and graphic images#as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation#state, thereby constructing the boundaries of the state itself. Restriction: Graduate standing or instructor permission required to register. Cross-listed with ETST 4030, RLST 4030, RLST 5030, HIST 4209 and HIST 5029. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5165 - Cultural Diversity Awareness in the Workplace (3 Credits)

This course will analyze the impact and effectiveness of cultural diversity awareness in a variety of workplace settings including educational institutions, businesses, health care organizations, and non-profit organizations. Students will learn how implicit biases and structural inequality impact workplace culture, a work place's productivity, and a work place's ability to fulfill their mission. By the end of the course, students will acquire the skills to advocate for and implement inclusive work place policies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ETST 4165. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5220 - African-American Literature (3 Credits)

Surveys African-American literature with special emphasis on post-Civil War writing. Cross-listed with ETST 4220, ENGL 4220, and ENGL 5220. Max hours: 3 Credits.

Grading Basis: Letter Grade

ETST 5305 - Women of Color Feminisms (3 Credits)

This course is an overview of women of color feminist theorizing (thinking) and praxis (practice) in the U.S. We will explore these feminisms through the writing, art, and organizing efforts of women and trans, femme, and non-binary people of color with a focus on key themes and concepts including identity, difference, oppression, intersectionality, representation, violence, resistance, empowerment, solidarity, and coalition. Texts for the course highlight key issues in the feminist theorizing and praxis of Black, Latina/x, Chicana/x, Asian (American), Pacific Islander, Indigenous, and Arab (American) women and trans, femme, and non-binary people of color, especially the politics of identity and representation; structural oppressions and violences; and practices of survival, resistance, and activism. Not only will we examine how these feminists have critiqued oppression(s) based on race, class, gender, sexuality, nationality, and religion, (as well as how these systems of domination intersect), but what kinds of approaches, strategies, and changes these thinkers and activists have organized for and promoted. Cross-listed with ETST 4305, WGST 4305 and WGST 5305. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5457 - American Political Thought (3 Credits)

Critical examination of American political life at the intersections of social categories such as race, class, gender, sexuality, disability, and Indigeneity. Exploration of key and marginal thinkers through a variety of texts and genres. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ETST 4457, PSCI 4457, and PSCI 5457. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

ETST 5939 - Graduate Internship in Ethnic Studies (1-6 Credits)

Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: Students must have graduate standing and must work with Experiential Learning Center advising to complete a course contract and gain approval. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 5960 - Capstone in Ethnic Studies (3 Credits)

Provides a broad overview of social research methods pertinent to the study of race, ethnicity, gender, and culture. Explores theories concerning "ethnicity and race" as both social construct and constituent feature of people's identities and lived experiences. Ethnic Studies is an interdisciplinary major where students make connections across diverse fields of inquiry; this course provides a structure for integrating an interdisciplinary examination of the intellectual, cultural, and social dimensions of racial and ethnic groups. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4960. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ETST 6950 - Independent Study: Ethnic Studies (1-18 Credits)

Independent study in ethnic studies.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Additional Information: Colorado State University.

Executive Business (XBUS)

XBUS 6000 - CU Executive MBA Transition to Learning (0 Credits)

This course is designed to facilitate the transition into the University of Colorado Executive MBA Program. Incoming students are provided with a range of resources and content to help them succeed within the program. Max hours: 0 Credits.

Grading Basis: Pass/Fail Only

XBUS 6470 - Legal and Ethical Environment of Business (3 Credits)

Students develop a working knowledge of legal and ethical parameters for business decision making. The course addresses the legal system and mechanisms for resolving disputes. Topics include constitutional law, torts, product liability, contracts, property law, consumer protection, intellectual property, business entities and employment law. It stresses the influence of legal issues on organizational decision making.

Restriction: Restricted to students admitted to the Executive MBA program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Executive MBA Program.

XBUS 6550 - Analyzing and Interpreting Accounting Information (3 Credits)

Emphasizes the use of accounting statements and data in making business decisions. External financial accounting information and concepts are used for investment and credit decisions. Internal managerial accounting information and concepts are used for product costing, cost analysis and management control. Restriction: Restricted to students in the Executive MBA Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Executive MBA Program.

XBUS 6775 - Digital Marketing Strategies (3 Credits)

This course gives executives the tools required to leverage digital media to best-identify, reach, persuade, and satisfy customers in an increasingly digital world. By the end of this course, you will be able to confidently establish a digital marketing strategy, and track its effectiveness against key performance indicators. The course will cover the what, why, and how of major current tactics (including online listening, website analytics, search engine optimization, online advertising, social media, and email) using applied methods. Max hours: 3 Credits.

Grading Basis: Letter Grade

XBUS 6804 - Negotiation for Executives (3 Credits)

Negotiation is the art and science of creating good agreements. This course expands managerial negotiation and conflict management skills by mixing lecture and practice, using hands on cases and exercises in which students negotiate with each other. The cases cover a range of negotiation contexts and provide the opportunity to discuss and develop effective strategies to attain better outcomes. Restriction: Restricted to students accepted into the Executive MBA program. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to students in the Executive MBA Program.

XBUS 6850 - Business Analytics (1.5 Credits)

Business Analytics. To compete in the global economy, businesses are collecting huge volumes of data about their customers, operations, and performance. But harnessing this data to deliver a competitive advantage is challenging without understanding how to use the data and what strategic opportunities are presented by the explosion in data. This course will explore practical strategies for implementing data-focused initiatives that create and capture more value. We will discuss what a business needs to build an internal analytics team and the decision-making processes that create competitive advantage. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

XBUS 6890 - Mergers and Acquisitions and Corporate Development (1.5 Credits)

In this course, we will focus on some of the key aspects of M&A deal-making and implementation, and we will adopt an integrative approach that emphasizes strategic management issues in corporate development. Through a combination of case studies and readings covering concepts and frameworks, course participants will be exposed to a range of M&A issues that can be grouped into four main pillars: M&A within Corporate Strategy, Advisory Inputs, Corporate Development Tools, Deal Implementation. Max hours: 1.5 Credits.

Grading Basis: Letter Grade

Executive Health Administration (XHAD)

XHAD 6464 - Healthcare Reform in the US (3 Credits)

All health systems struggle with problems of suboptimal quality, high and growing costs, and uneven or inequitable access to healthcare services. Managing the trade-offs among these goals makes healthcare reform central to economic, social and political discussions worldwide. This class will focus primarily on health care reform at the macro-level; efforts at the federal and/or state level to fundamentally and comprehensively modify systems for financing, delivery and access to high quality health care in this country. Students will be asked to apply and integrate basic economic, finance, policy and other analytic frameworks to evaluating past, present and future healthcare reform initiatives, with a particular focus on the actual/potential impact of the issues identified as initially catalyzing or shaping health reform efforts. Max hours: 3 Credits.

Grading Basis: Letter Grade

XHAD 6465 - Baldrige Performance Excellence and Transformational Change (3 Credits)

This course is designed to provide a comprehensive overview of the Baldrige Framework for Performance Excellence and how leading executives use it to as a blueprint to build their organizational systems as well as an introduction to essential best practices in change leadership and management. Max hours: 3 Credits.

Grading Basis: Letter Grade

XHAD 6468 - Introduction to Medical Practice Management (3 Credits)

This course is designed to provide a comprehensive overview of medical practice management, the issues, tools, and techniques involved in managing a medical practice. Medical Practice Management will also provide the learners with an understanding of some of the financial models and regulatory issues that influence today's medical practice with an insight into the culture, human resource and governance issues that make medical practices unique among healthcare organizations. Max hours: 3 Credits.

Grading Basis: Letter Grade

XHAD 6484 - COVID-19 and the Law (3 Credits)

Develops student understanding of the numerous ways in which the law must reckon with, regulate, and regulate around, COVID-19. Shows how, while public health law primarily engages with pandemic to stop its spread, secondary legal regimes must also take pandemics into account in order to ensure the operation of law. This includes the laws of contract, tort, property, finance, welfare, and the like. Situates reading and format within ongoing pandemics to the degree appropriate. Restriction: Restricted to students currently enrolled in the Executive MBA in Health Administration Program. Permission required for other CU Denver Health Administration students. Max hours: 3 credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Executive MBA in Health Administration program.

XHAD 6485 - Healthcare Data Analytics (3 Credits)

This course equips healthcare executives to use data to discover what works; evaluate and improve practices and programs; intervene more effectively to measurably improve process KPIs; and better manage financial risks and improve health outcomes in a rapidly changing world. Restriction: Restricted to students in the Executive MBA in Health Administration program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students in the Executive MBA in Health Administration program.

XHAD 6880 - Topics for Global Business In Healthcare Administration (3 Credits)

The Topics for Global Business for Healthcare Admin course integrates theory and practice through an examination of the global business environment. This course includes visits to international business centers where students will interact directly with executives and senior managers of international and domestic companies. The travel component for this course is an eight-day international business experience that occurs during the final semester of the Program. It provides first-hand, on-the-spot experience of how business is conducted (e.g., strategy, trade, organization, finance, marketing, management, economics, government, supply chain, culture, etc.) in the host countries. The trip presents a unique opportunity for face-to-face contact and exchange of experience between healthcare executives from the U.S. and their counterparts in the destination countries. Repeatable. Max Hours: 9 Credits

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Finance (FNCE)

FNCE 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

FNCE 6290 - Quantitative Methods for Finance (3 Credits)

This course provides a statistical foundation for subsequent courses in the Master of Science in Finance program. Major topics include descriptive statistics, probability theory, statistical estimation and inference and regression analysis. The emphasis is on finance applications, such as risk measurement, for portfolio diversification and the "market model". In addition, students develop competence in the use of statistical software packages. This course provides preparation for the statistical portions of the Certified Financial Analyst professional examinations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6300 - Macroeconomics and Financial Markets (3 Credits)

Covers the U.S. financial system in the global economy. Specific topics include financial institutions, money creation and monetary policy; the Federal Reserve System and its operation; the international financial system; interest rate determination, yield curves, and their relation to fiscal policy; the role of households and business in financial markets; stock markets; and money markets and instruments. (Required for the M.S. in Finance degree.) Coreq: BUSN 6620. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6620 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6310 - Financial Decisions and Policies (3 Credits)

Emphasizes investment and financing decisions, and the analysis of the financial condition of the firm. Specific topics include capital budgeting, cost of capital, financing mix and strategy, firm valuation and management of working capital. Instruction is by the case method. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6330 - Investment Management Analysis (3 Credits)

In this course students will learn investment theories and how to apply them to portfolio management. Topics covered include asset allocation, security markets, the analysis and use of investment information, risk analysis and security valuation. This course is required for the M.S. in Finance degree. Prereq: BUSN 6640 and BUSN 6620 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 and BUSN 6620 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6340 - Business Firm Valuation (3 Credits)

In this class, students will learn two valuation techniques, fundamental valuation and relative valuation, to value a business. These techniques are useful in such situations as valuing firms for mergers and acquisitions and valuing stocks for investment purposes. Some of the topics included are valuation of start-up firms, valuation of privately held firms, and valuation of firms with negative earnings. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6350 - Financial Innovations (3 Credits)

Innovations include zero coupon bonds, inflation indexed bonds, structured notes, asset-backed securities, collateralized mortgage obligations, and interest rate swaps. The student learns about the markets and pricing of these securities, and how they affect interest rate risk. The course prepares the student for careers in corporate treasury management, structured financing, swaps trading, and mortgage backed securities design. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6360 - Management of Financial Institutions (3 Credits)

Overview of financial institutions and their risk management/financial performance management issues such as: management of operational, credit, liquidity, interest-rate, capital, off-balance sheet, and environmental risks; Uniform Bank Performance Report (UBPR) risk/performance analysis, hedging techniques and regulations/performance/risk. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6365 - Banking Principles and Practices (3-9 Credits)

Covers money and capital markets, commercial lending, asset and liability management, loan portfolio management and bank management. This class is only available to Colorado Graduate School of Banking students. Similar material is covered in FNCE 6300 and FNCE 6360. Therefore Business School students must enroll in those courses.

Banking students cannot receive credit for FNCE 6300 or FNCE 6360.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6370 - International Financial Management (3 Credits)

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources and policies of firms doing business internationally. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with INTB 6372. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

FNCE 6372 - Time-Series Forecasting (3 Credits)

Students learn forecasting methodologies such as ARIMA, regression, smoothing, and time-series decomposition applicable to marketing, finance, accounting, human resources management, and supply chain and production management decision-making. This course focuses on practical applications of forecasting techniques, choosing and comparing appropriate methods and applying the results to workplace situations. If you do not meet the prerequisites you may contact the instructor for permission to register. Prereq: BANA 6610 or BUSN 6530 or FNCE 6290 or (BUSN 6530 taken at CU Denver or consent of instructor - no CBK waivers of BUSN 6530 will be considered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BANA 6610 or BUSN 6530 or FNCE 6290 with a grade of C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6380 - Futures and Options (3 Credits)

This covers both speculation and hedging using futures and options. The student learns about futures pricing, how futures are related to the underlying commodities and how to design hedges. Stock index futures and interest rates futures get particular attention. The course covers the theory and application of option pricing, focusing on the binomial and Black-Scholes models. Popular options trading strategies are discussed. This course is useful for those who wish to trade or become portfolio managers, as well as those who plan on corporate treasury management. Prereq: BUSN 6640 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6382 - Survey of Financial Derivatives (3 Credits)

This course introduces forward contracts, used in price risk management for millennia. We cover the properties of forward/futures contracts, structure of the markets and strategic implications for speculation and hedging. We price forwards from spot price, and introduce convenience yield. Options used for insurance purpose (think of your car insurance as a put option) is a more expensive way to manage risk; we cover option strategies and basic pricing. The course concludes with swaps, credit derivatives and structured products. Asset classes covered are equity, fixed income, currency, agriculture, energy (oil/gas and electricity) and metal/mining. Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6410 - Real Options and Decisions Under Uncertainty (3 Credits)

This is an applied course in making investment decisions under uncertainty and flexibility. Traditional NPV analysis using tools such as Discounted Cash Flow (DCF) model assumes that once an investment decision has been made, managers have no control over the outcome and they remain passive throughout the life of the project. Most corporate projects, however, have a great deal of flexibility in terms of their execution. This course will help students develop skills to identify and analyze real options so that they may approach real world corporate investment decisions in a strategic manner. This course may be used to fulfill the requirement for an options course in the MS (Finance) program. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Max hours: 3 Credits. Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6411 - International Corporate Governance (3 Credits)

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, and how and why these roles, goals, and mechanisms vary across nations. The topics covered in the course include managerial compensation, board of director structure and ethics, shareholder activism, and how governance structures differ across countries. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with FNCE 4411 and INTB 6411. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6420 - Mergers and Acquisitions (3 Credits)

Examines the processes and decisions by which mergers, takeovers and other corporate restructuring occur, the transactions occur. Analyzes merger and acquisition decisions as part of strategic decision making, and how firms are valued in mergers. Discusses the market for corporate control and the public policy implications of mergers and corporate governance. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6450 - Short-Term Financial Management (3 Credits)

This course is a survey of methods for managing short term assets and liabilities. Specific topics include the analysis of the firm's liquidity and cash flow, banking relationships; collection and disbursement systems; management of short term investment and financing; management of receivables, payables and inventory; and short term forecasting. This course is affiliated with the Association of Financial Professionals, allowing students earning at least a 'B' to sit for the Certified Treasury Professional (CTP-A) exam. Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6460 - Emerging Market Finance (3 Credits)

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with INTB 6460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

FNCE 6470 - Behavioral Finance (3 Credits)

Over the past several decades, the field of finance has developed a successful paradigm based on the notions that investors and managers were generally rational and the prices of securities were generally "efficient." In recent years, however, anecdotal evidence as well as theoretical and empirical research has shown this paradigm to be insufficient to describe various features of actual financial markets. In this course we examine how the insights of behavioral finance complements the traditional paradigm and sheds light on the behavior of asset prices, corporate finance, and various Wall Street institutions and practices. Prereq: BUSN 6640. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640

FNCE 6480 - Financial Modeling (3 Credits)

Develops and implements financial models for purposes of financial planning and decision making. This course is intended to allow the student to increase her or his knowledge and skill in the development of various types of computer-based financial planning models. The students are exposed to the uses of a variety of computer software packages that can be used for modeling financial planning problems. Prereq: BUSN 6640, knowledge of computer and spreadsheet software. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6490 - Commodity and Equity Trading (3 Credits)

This is a co-listed class with the J.P. Morgan Center for Commodities and the Finance Department. This course focuses on how securities and futures contracts are designed and traded including trading exchange operations, regulation, trading mechanisms and processes. Students will learn the theory and practice of securities and futures contract trading with a focus on hands-on trading experience using industry software (CQG and Bloomberg) as well use of data sources (Morningstar). In this course, we will review the origins of liquidity, volatility, price efficiency, and trading profits. Next we will cover a host of topics concerning equity and commodity trade execution strategies, such as why and how investors trade, what and when investors profit from investing and speculating, the key principles of high-frequency trading and investor's overconfidence, why market institutions are organized as they are, and the role of public policy in the markets. Cross-listed with CMDT 4490, CMDT 6490 and FNCE 4490. Max hours: 3 Credits.

Grading Basis: Letter Grade

FNCE 6800 - Special Topics (3 Credits)

Experimental course offered irregularly for the purpose of presenting new subject matter in finance. Prerequisites vary depending upon topics covered. (Consult the 'Schedule Planner' for semester offerings.) Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6802 - Foundations of Commodities (3 Credits)

This course introduces students to the physical aspects of commodities and connects them to the financial markets in which commodities are traded. Fundamental concepts and terminology necessary for understanding commodity production, transportation, economics, financial analysis and marketing are described. Supply chains for several specific commodities are reviewed in detail, as examples of the production and market structure knowledge needed to be successful professional participants in commodity trading capacities. The course also serves a foundation for more focused education in the specific commodity sectors, as well as the applied use of marketing and financial trading concepts learned in other courses. Cross-listed with FNCE 4802 and CMDT 4802/6802. Max hours: 3 Credits.

Grading Basis: Letter Grade

FNCE 6840 - Independent Study: FNCE (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 6995 - Travel Study (3 Credits)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

FNCE 8990 - Dissertation Development (1-15 Credits)

Supports development of a dissertation in conjunction with a student's advisor. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Additional Information: Report as Full Time.

Fine Arts (FINE)

FINE 5020 - Graduate Anatomy for Artists (3 Credits)

An intensive figure drawing course that focuses on structure, movement and proportions. Skeletal and muscular systems are studied using the classic texts of artistic anatomy. A research paper is also required.

Prereq: Graduate Level Standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

Typically Offered: Spring.

FINE 5190 - Graduate Photography (3 Credits)

Graduate students create an independent body of photographic work that integrates sophisticated concepts with technical mastery. Through critiques, presentations and discussions, students relate subject matter to historical and contemporary context. Students build expertise in professional development in photography. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: FINE 4196 Restriction: Restricted to FINE-BFA PHO majors within the College of Arts and Media

FINE 5200 - Graduate Painting/Drawing I (3 Credits)

An intensive painting and drawing course for students who have completed their bachelor's degree in fine arts to further develop their technical and expressive means to implement their ideas. Self-directed studio is paired with studies in theoretical and critical analysis. Note: Students missing the first 2 classes of this course may be administratively dropped. Students will not be allowed to add course if they have missed the first 2 classes. Restriction: Restricted to CU Denver Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

FINE 5210 - Graduate Painting/Drawing II (3 Credits)

This is the second level of graduate painting and drawing with a tutorial focus. Emphasis is placed on directed research and the development of significant body of original work reflecting student's expressive and theoretical concerns. Note: Students missing the first 2 classes of this course may be administratively dropped. Students will not be allowed to add course if they have missed the first 2 classes. Restriction: Restricted to CU Denver Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

FINE 5340 - Topics in Studio Art (1-3 Credits)

Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

FINE 5446 - Visualization & Infographics (3 Credits)

In our data and information-rich society, visual representations of data can be useful for making sense of available information and fostering understanding. This course engages students in critique existing work and encourages a thoughtful design process toward creation of information graphics and simple data/information visualizations. Max hours: 3 Credits.

Grading Basis: Letter Grade

FINE 5447 - Presenting Science (3 Credits)

Sophisticated graphical components can help a viewing audience understand complex scientific information more clearly. This project-based learning course engages students in creation of thoughtful graphic explanations of science for the purpose of enhancing scientific presentations and audience comprehension. Max hours: 3 Credits.

Grading Basis: Letter Grade

FINE 5448 - BioMedical 3D Animation (3 Credits)

3D Animation can be a powerful tool for telling stories rooted in science and medicine. This course provides opportunity to learn from existing animated works while honing skills in storyboarding, narrative and 3D animation with focus on biology, science, and health education.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to senior CRAR and FINE majors within the College of Arts and Media.

FINE 5450 - Social Engagement by Design (3-6 Credits)

Through lectures, discussions and conducting onsite research in international settings, students will become familiar with professional practitioners' Perspectives and experiences in the field of socially engaged design while interrogating current practices, policies, and expectations that inform community engagement and by Design.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Typically Offered: Summer.

FINE 5522 - Interdisciplinary Art in Ireland (6 Credits)

The interdisciplinary course introduces students to the methods and concepts of contemporary site-specific art as critical theory through lecture and critique and as practice in the rural/urban landscape and studio along Ireland's County Clare coastline in the Burren region. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

FINE 5523 - Topics in Art History I: Art Before Modernism (1-3 Credits)

Variable: Art History lecture course pertaining to art before Modernism. Restriction: Restricted to Graduate Students. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Graduate level students

FINE 5524 - Topics in Art History II: Modern and Contemporary (3 Credits)

Variable: Art History lecture course pertaining to art since Modernism.

Restriction: Restricted to Graduate Students. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Graduate level students

FINE 5525 - Museum Studies (3 Credits)

A seminar about museums and art galleries as institutions for the preservation and exhibition of cultural materials. Through writing assignments, discussions, site visits, and analysis, students will demonstrate knowledge and critical thinking on the display of art.

Restriction: Restricted to Graduate Students. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Graduate level students

FINE 5600 - History of Modern Design:Industrial Revolution-Present (3 Credits)

A lecture course involving the history of design from the Industrial Revolution to the present. The course will address the graphic design, typography, architecture, "Decorative arts", and new media from each period/major design movement in that time frame. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5610 - Pre-Columbian Art (3 Credits)

A lecture course on the art and architecture of Mesoamerica and the Andes before the Spanish conquest. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5620 - American Art (3 Credits)

A lecture course on the art of the United States from colonial times to World War II. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5630 - History of Latin American Art:1520-1820 (3 Credits)

A lecture course studying Latin American art of 1520-1820, including major artists and periods. Through visual analysis, vocabulary acquisition, exams, and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the arts. Restriction: Restricted to Graduate Students. Cross-listed with FINE 4630. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5632 - History of Digital Media (3 Credits)

Art historical survey and critical discourse of digital and electronic multimedia that covers the influences which have shaped this medium, its major contributors, the technological innovations and cultural impacts on society as an art form and commercial market form. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5644 - Topics in Art History (1-3 Credits)

Restriction: Restricted to Graduate Students. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

FINE 5670 - Greek and Roman Art (3 Credits)

A lecture course on art and architecture from ancient Greece and Rome. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5680 - Art of the Middle Ages (3 Credits)

A lecture course on western European art and architecture from the fourth to the fourteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5700 - Italian Renaissance Art (3 Credits)

A lecture course about developments in Italian Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5705 - Northern Renaissance Art (3 Credits)

A lecture course about developments in Northern Renaissance art and architecture. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5710 - Baroque and Rococo Art (3 Credits)

A lecture course on Italy, Spain, France, England, and the Netherlands during the seventeenth and eighteenth centuries. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5730 - Arts of Japan (3 Credits)

A lecture course on selected themes and periods in Japanese art. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5750 - Arts of China (3 Credits)

A lecture course on selected themes and periods in the arts and architecture of China. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5770 - Art of India and Southeast Asia (3 Credits)

A lecture course on selected themes and periods in the arts of India and Southeast Asia. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5790 - Methods in Art History (3 Credits)

A seminar about the various research methodologies in the history of art. Through reading, discussion, research, writing assignments, and presentations, students will demonstrate knowledge of art historiography. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

Typically Offered: Fall.

FINE 5825 - 3D Architectural Visualization (3 Credits)

A lecture/lab course covering the 3D visualization of architectural projects. Students will develop skills/ knowledge about the techniques for creating realistic 3D Architectural visualization. Special emphasis will be placed creating realism in modeling, materials, lighting, and professional renderings. Intro level 3D/CAD skills req. Max hours: 3 Credits.

Grading Basis: Letter Grade

FINE 5840 - Independent Study: FINE (1-3 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

FINE 5939 - Internship (1-6 Credits)

Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

FINE 5970 - Modernist Art (3 Credits)

A lecture course about developments in Modernist art and architecture from the late 18th century to 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of the period's historical developments and an ability to analyze its art. Restriction: Restricted to Graduate Students.

Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5980 - Gender in Contemporary Art (3 Credits)

This lecture course will address ways in which gender issues have affected the creation and study of visual arts since the early 20th century, with an emphasis on art and culture since World War II. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5981 - Topics Seminar in Art History I: Tattoos and Body Art (3 Credits)

From prehistoric traditions to modern revivals, tattooing has proved to be an enduring feature of artistic practice. The seminar will analyze examples of tattoos from different cultures and contexts, so as to understand the variety in form and function. Cross-listed with FINE 4981. Max hours: 3 Credits.

Grading Basis: Letter Grade

FINE 5990 - Contemporary Art: 1960-Present (3 Credits)

A lecture course about developments in art and architecture since 1960. Through visual analysis, vocabulary acquisition, discussion, exams and writing assignments, students will demonstrate knowledge of historical developments and an ability to analyze the art. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

FINE 5993 - Topics Seminar in Art History I: Art before Modernism (3 Credits)

Variable: Art History seminar pertaining to art before Modernism.

Restriction: Restricted to Graduate Students. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

FINE 5994 - Topics Seminar in Art History II: Modern and Contemporary Art (3 Credits)

Variable: Art History seminar pertaining to Modern and contemporary art.

Restriction: Restricted to Graduate Students. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

FINE 5995 - Travel Study (1-15 Credits)

Created for students doing travel study in a foreign country. Students register through the Office of International Education. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Foundations (FNDS)

FNDS 5000 - Teaching as a Profession (3 Credits)

General foundations of education course for pre-service candidates.

Provides a broad overview of the historical, sociological, philosophical, and legal foundations of education. Includes an examination of contemporary issues in schooling, school organizational patterns, and the professional rights and responsibilities of the teacher. Max hours: 3 Credits.

Grading Basis: Letter Grade

French (FREN)

FREN 5082 - Introduction to Translation (3 Credits)

Introduces the methodology and practice of written translation from English to French/French to English. Students will learn techniques on how to avoid word by word translation, faulty sentence structure and anglicisms by focusing on grammar, syntax and vocabulary. Note: Students must demonstrate third-year competence and advanced writing skills in English. Students with native or near-native level proficiency in French must consult with the French advisor before enrolling in this course. These students may, in some cases, take this course. The instructor of the course and/or the French advisor reserve the right to determine the level of linguistic proficiency of the student and his or her admission to the class by means of an oral interview and/or placement exam scores. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4082. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5200 - French Civilization Through the Nineteenth Century (3 Credits)

Development of French culture and civilization from a historical perspective, beginning with the origins of France and continuing through the 19th century. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: spring term of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5210 - French Civilization - Twentieth and Twenty-First Centuries (3 Credits)

(Continuation of FREN 5200) The development of French culture and civilization in a historical perspective from the beginning of the 20th century to the present. Includes historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Term offered: fall term of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5430 - Nineteenth Century French Novel (3 Credits)

Development of the French novel during the 19th century. Includes such writers as Stendhal, Hugo, Balzac, George Sand, Flaubert, Maupassant and Zola. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4430. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5480 - Twentieth Century French Novel (3 Credits)

Represents novels of the 20th century, a period of great innovation in the French novel. Authors generally treated are Camus, Giono, Ernaux and Duras. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4480. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5510 - French Women Writers (3 Credits)

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4510 and WGST 4511/5511. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

FREN 5520 - Voices of Haiti and the Caribbean (3 Credits)

This course explores the literary production of contemporary Haitian and Caribbean writers within varied cultural and gender contexts. It focuses on historical, societal and post-quake issues confronting both men and women writers of the French Caribbean. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4520. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5600 - History of the French Language (3 Credits)

Studies phonological, morphological, and syntactic changes in the language of Gaul from Latin to modern French. Prereq: graduate standing. Note: This course is intended for students with an undergraduate degree in French or advanced-level proficiency. Cross-listed with FREN 4600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

FREN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

FREN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

FREN 5840 - Independent Study: FREN (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

FREN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

FREN 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Term offered: summer. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Summer.

Geography (GEOG)

GEOG 5050 - Applied Spatial Statistics (3 Credits)

Practice and application of spatial analytical and statistical methods using modern GIS and spatial statistical software. Topics include spatial data handling, interpolation, pattern analysis, cluster detection, visualization, and modeling. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: an introductory course in statistics is strongly recommended for success in this course. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing (3 Credits)

An in-depth treatment of the use of aerial photographs and other forms of imagery for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Cross-listed with GEOG 4060. Completion of GEOG 2080 with a C or better is recommended for optimal student success. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5070 - Remote Sensing II: Advanced Remote Sensing (3 Credits)

Focuses on digital image processing of satellite and aerial images. Students explore the nature of digital image data, gain an understanding of image analysis using PCs, and learn about the use of analysis products in the development of GIS databases. Prereq: Graduate standing and GEOG 4060/5060 or permission of instructor. Cross-listed with GEOG 4070. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4060/5060

GEOG 5080 - Introduction to GIS (3 Credits)

Introduces Geographic Information Systems (GIS), including justification, hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data. Includes hands-on use of a GIS workstation. Cross-listed with GEOG 4080. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5081 - Cartography and Computer Mapping (3 Credits)

Provides an introduction to the art and science of cartography (map making). Students will learn about design principles, tools and techniques of map production, culminating in the creation of a high-quality map through hands-on exercises. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: Completion of GEOG 2080 with a C or better is recommended for optimal student success. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5085 - GIS Applications for the Urban Environment (3 Credits)

Takes a more detailed look at basic concepts presented in the introductory GIS course, concentrating on how GIS is used to solve real-world geographic problems. Various GIS applications within both the natural and social sciences are highlighted. The selection of specific topics is flexible, based on the interests of enrolled students. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4085. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5086 - FOSS4G Systems Integration (3 Credits)

Focuses on the integration of different FOSS4G (Free and Open Source Software for Geospatial Applications) software and technologies to create geospatial information systems that access data from different sources, storage structures, and formats to provide information to support decision making processes. Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092. Cross-listed with GEOG 4086. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 4091 or 5091, and GEOG 4092 or 5092

GEOG 5090 - Environmental Modeling with Geographic Information Systems (3 Credits)

Applies raster spatial analysis and modeling to study processes and spatial relationships to support decisionmaking in natural and built environments. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4090. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5091 - Open Source Software for Geospatial Applications (3 Credits)

Students will master the individual use and integration of a stack of the most powerful Free and Open Source Software for Geospatial Applications (FOSS4G) to analyze spatial problems and create Spatial Data Infrastructures in different technological, socio-economic and organizational settings. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4091. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5092 - GIS Programming and Automation (3 Credits)

Students will learn the most commonly used programming language to automate GIS geoprocessing tasks and workflows in the latest versions of the most popular GIS systems. Cross-listed with GEOG 4092. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5095 - Deploying GIS Functionality on the Web (3 Credits)

Covers the core principles and technologies that allow the deployment of geographic information system (GIS) functionality over the World Wide Web. Hands-on exercises make use of the latest commercial software as well as open source technologies. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Cross-listed with GEOG 4095. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

GEOG 5150 - Place, Landscape, and Meaning (3 Credits)

Investigates concepts that constitute place and landscape—how they are not just simply "there". Incorporates different schools of thought to help understand why landscapes are objects inseparable from us and open to multiple interpretations and meanings. Note: this course assumes that students have completed an introductory human geography course. Prereq: Graduate standing. Cross-listed with GEOG 4150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5220 - Environmental Impact Assessment (3 Credits)

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Cross-listed with GEOG 4220, URPL 6549. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5230 - Hazard Mitigation and Vulnerability Assessment (3 Credits)

Examines hazard mitigation and its planning and policy implications, emphasizing how vulnerability assessments play an integral role. Students explore how mitigation minimizes the impacts from hazards and use GIS to conduct a local study. Note: this course assumes that students have completed GEOG 2202 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Note: this course assumes that students have completed GEOG 4080 or GEOG 5080 and/or have a background in public health. Cross-listed with GEOG 4235, HBSC 7235. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOG 5240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOL 4240, 5240 and GEOG 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOL 4251 and GEOL 5251. Restricted to Graduate and Graduate Non-Degree students. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5265 - Sustainability in Resources Management (3 Credits)

Sustainability and sustainable development are the dominant economic, environmental and social issues of the 21st century. Follows a multi-disciplinary approach to these concepts. Case studies demonstrate their implementation in different geographical, ecological and socio-economic conditions worldwide. Note: this course assumes that students have completed ENVS 1042 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4265. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5300 - Children's Geographies (3 Credits)

This seminar is an interdisciplinary investigation of children, childhood and environment in the context of sustainability and equity. Theoretical and methodological perspectives are applied to understand children's interactions with/in different spaces. Cross-listed with GEOG 4300, ENVS 4300 and ENVS 5300. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5301 - Population, Culture, and Resources (3 Credits)

Increasing world human populations are examined in the context of regional and global resources. Opposing viewpoints are studied, and students are required to complete a case study of a self-selected issue analyzing viewpoints associated with relevant opposing opinions. Note: Students may not receive credit for this course if they have already received credit for GEOG 3301. Cross-listed with GEOG 4301. Restriction: Restricted to graduate students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5335 - Contemporary Environmental Issues (3 Credits)

Provides an overview of environmental challenges facing society today, focusing on how humans impact and change the environment. Opposing views and environmental policy at the local, state, national, and international levels are explored. Cross-listed with GEOG 4335. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5350 - Environment and Society in the American Past (3 Credits)

Overview of the geographical development of North American society from the late 15th century to the mid-20th century. A comparative regional approach emphasizing relationships between natural resource exploitation, cultural landscape formation and environmental change. Cross-listed with GEOG 4350. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5380 - Anthropocene Futures (3 Credits)

We are living in the "Anthropocene"—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity's intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth's evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a "good" Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors.

Cross-listed with GEOG 4380, ENVS 4380, and ENVS 5380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5420 - The Politics of Nature (3 Credits)

"Examines how economic systems, scientific discovery, institutional policies, and environmental knowledge converge to shape the environment and mediate the way societies understand, manage and respond to environmental changes in both the United States and the developing world. Cross-listed with GEOG 4420. Prereq: Graduate standing. Max hours: 3 Credits."

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5440 - Science, Policy and the Environment (3 Credits)

Examines the social, economic and political forces shaping scientific discovery and the development and enforcement of environmental policy. Students will examine perspectives on issues such as risk, expertise, uncertainty and objectivity that influence the problem-defining, standard-setting and policy-making process. Cross-listed with GEOG 4440. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5640 - Urban Geography: Denver and the U.S. (3 Credits)

Uses a combined lecture/seminar format to explore research themes in urban geography. Topics covered include both historical and contemporary processes of urban development and transformation. Particular emphasis is placed on the U.S. and Colorado's Front Range. Cross-listed with GEOG 4640. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5680 - Urban Sustainability: Perspectives and Practice (3 Credits)

Examines various perspectives on sustainability, including ambiguities and opportunities of sustainability as a conceptual framework. Class also examines what sustainability looks like in practice, using numerous topics such as poverty and urban farming to water and climate change. Cross-listed with GEOG 4680. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5710 - Disasters, Climate Change, and Health (3 Credits)

Provides a review of the impacts of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, and adaptation. Note: this course assumes that students have completed GEOG 2202 or GEOG 3501. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-listed with GEOG 4720/ ENVS 4720/ ENVS 5720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, ENVS 4740, ENVS 5740. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors.

Cross-listed with GEOG 4750, ENVS 4750, and ENVS 5750. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5840 - Independent Study (1-3 Credits)

Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

GEOG 5850 - Understanding And Communicating Field Methods (3 Credits)

Interdisciplinary course that presents a balanced overview of common field methods and how to communicate them effectively to a general audience. Includes hands-on experience with various field methods (e.g., transects, survey design, historical assessment, GIS, etc.) and communication strategies. Note: this course assumes that students have completed an introductory geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4850 and ENVS 4850/5850. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOG 5900 - Colloquium (1 Credit)

Engages students and faculty in discussion of current and pertinent world topics, including specific readings, (guest) presentations, and creation of working research papers, among other items. Students and faculty may work in research groups to accomplish specific goals. Prereq: Graduate standing. Cross-listed with ENVS 4900, ENVS 5900, GEOG 4900. Repeatable. Max Hours: 4 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 4.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

GEOG 5990 - Special Topics In Geography (1-6 Credits)

Course content varies from semester to semester, depending on faculty member teaching the course. Prereq: Graduate standing. Repeatable.

Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5992 - Advanced Regional Field Study (1-6 Credits)

Directed, hands-on study of concepts involved in understanding geographic regions. Utilizes field observations, field techniques/methods, & data observation, collection, analysis, & interpretation related to the specific region being studied. May include physical as well as cultural phenomena. Note: Instructor permission required. Cross-listed with GEOG 4992, ENVS 4992, ENVS 5992. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

GEOG 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 4995, ENVS 5995, and GEOG 4995. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 Credits)

This seminar allows students to gain a deeper appreciation for historical and contemporary geographical approaches to understanding the relationship between society and the environment through a survey review of seminal concepts, theories and debates that have shaped the discipline. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6700 - Integrated Methods (3 Credits)

Geographers employ a variety of quantitative and qualitative methods in their research. The course presents these methods as a continuum, rather than separate typologies, and reviews the difference between integrated and mixed methods. Students will evaluate how and when to apply various methods to most appropriately elicit data. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6750 - Research Design (3 Credits)

Reviews research framework common to all geographers. Reviews the key steps in designing and executing high-caliber independent research, including topic selection, literature review and data collection analysis. Students will develop competence in applying relevant theories from the natural and social sciences through projects. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6800 - Community-Based Research Practicum (3 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prerequisite: GEOG 6300 with a C or higher. Cross-list ENVS 6800. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prerequisite: GEOG 6300 with a C or higher.

GEOG 6840 - Independent Study: GEOG (1-3 Credits)

Independent research for graduate major students. Prereq: Permission of department. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOG 6950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOG 8990 - Doctor's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Geology (GEOL)

GEOL 5001 - RM-MSMSP Earth Processes I (4 Credits)

Systematic study of geological concepts, rock and mineral formation, plate tectonics, volcanism and earthquakes, landforms and weathering, historical environmental interpretation. Includes a field component. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: students should obtain permission of project director prior to enrolling in this course. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5002 - RM-MSMSP Earth Sciences II - Sedimentology and Paleontology (4 Credits)

Field and lecture course building on Earth Sciences I, which covers internal earth processes. Students learn about erosional processes and how sedimentary rocks are deposited and may be preserved; the different ways fossils are preserved; describing rocks in the field; and collecting, preparing and describing fossils. Provides an overview of the geology of the area so that students can place the detailed studies in context. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: GEOL 5001. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: GEOL 5001

GEOL 5003 - RM-MSMSP: Earth Science in Context (4 Credits)

Designed for teachers in the RM-MSMSP program. Topics include global climate change, glaciers, coastal geology, volcanism, and their effects on culture. Monuments such as Florissant Fossil Beds, Ice Core, Cave of the Winds and a quarry will be visited. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: Graduate standing. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5004 - RM-MSMSP Research Experience for Teachers - Geology Cohort (1-6 Credits)

A five-week research exploration in which RM-MSMSP teachers will raise their level of relevant scientific understanding by engaging in a "hands-on" workshop, transforming what they have learned into new curricular materials that will improve the scientific abilities of their students and hopefully stimulate them to consider a STEM career. Note: credit may not apply toward any CLAS degree. Prereq: Graduate standing. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5030 - Environmental Geology (3 Credits)

Applies geological information to interactions between people and the physical environment. Increasing awareness of its importance in our society means that this is an expanding field as companies are required to address the environmental consequences of their actions. Note: students should be enrolled in the MSES program to take this course. All other students should consult with the instructor and obtain their permission prior to registering for this course. Prereq: Graduate standing. Cross-listed with GEOL 4030 and ENVS 5030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5111 - Field Methods in Geology (3 Credits)

Introduction to the basic methods of geologic mapping (metamorphic, sedimentary, and igneous rocks), including use of the Brunton compass and Jacob Staff, as well as preparation of measured stratigraphic sections, geologic maps, and geologic cross-sections. Note: this course assumes that students have completed GEOL 1072 or GEOG 1202. GEOL 3421 is strongly recommended. Prereq: Graduate standing. Cross-listed with GEOL 4111. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232. Prereq: Graduate standing. Cross-listed with GEOG 4240, 5240 and GEOL 4240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOG 5251 and GEOL 4251. Restriction: Restricted to Graduate and Graduate Non-Degree students. GEOG 3232 is strongly recommended, though not required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072. Prereq: Graduate standing. Cross-listed with GEOG/GEOL 4270/5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5780 - Engineering Geology (4 Credits)

Studies geology as utilized in engineering and environmental practice. Emphasizes a conceptual integration of geologic materials, processes, and rates of change as a basis for successful application of geologic knowledge to environmental planning and engineering design projects. Note: this course assumes that students have completed MATH 2411 and CVEN 2121. Prereq: Graduate standing. Cross-listed with GEOL 4780 and CVEN 5780. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOL 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 5950 - Master's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOL 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with GEOL 4995. Repeatable. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6840 - Independent Study: GEOL (1-3 Credits)

Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOL 6950 - Master's Thesis (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOL 6960 - Master's Project (1-8 Credits)

Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

German (GRMN)

GRMN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages.

Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

GRMN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods.

This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

GRMN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GRMN 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Global Energy Management (GEMM)

GEMM 6000 - 21st Century Global Energy Issues and Realities (3 Credits)

Introduction to the global energy industry's past, present and future.

Current and historical issues in regions such as: Atlantic Basin, former Soviet Union, east of Suez, North and South America will be covered.

World production centers and markets are discussed to include relevant energy security, scenario planning, risk management and regulation, deregulation, and environmental concerns. Note: Students will learn the geographic distribution of energy resources worldwide including governmental systems. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6100 - Global Energy Economics (3 Credits)

Course includes energy geo-economics with and introduction to managerial tools of the trade. Topics will include world energy markets-demand and supply; refining and marketing, energy forecasts, oil and gas transportation, and National Oil Companies vs. International Oil Companies. An introduction to environmental economics will also help students connect the energy industry to sustainable work practices.

In addition students will learn the geographic distribution of energy resources worldwide along with the political and government systems associated with those resources. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6200 - Environmental, Regulatory, Legal & Political Environment in the Energy Industry (3 Credits)

Exploration of current political situations regarding the energy industry, its environmental impact in the short and long term. Topics include climate change, pollution, solid wastes and conversions to natural resources. Students will become familiar with national and international energy laws and regulations, financial arrangements, confidentiality, and bidding agreements. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6210 - Energy and the Law: Property and Contracts (3 Credits)
The elective will focus on the process of managing the use and development of land resources in a sustainable way. Topics such as; public controls, powers used for land regulation, and an intro to real estate will be covered to enhance students understanding of land management and its application to the energy industry. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6220 - Interacting With Foreign Governments And State Enterprises (3 Credits)

Globalization of many energy companies, dwindling U.S. energy sources, and growing overseas energy demand have increased the need for energy professionals to gain expertise in doing business with foreign governments and state enterprises, which play a much greater role in the ownership and operation of energy extraction and energy delivery in virtually all countries beyond the United States and Canada. This course reviews negotiation strategies in the context of uncertain contract enforcement, volatility and uncertainty of prices and restrictions, and highly contentious political contexts. It also reviews the approaches for interacting effectively with state enterprises that are often undercapitalized and inefficient, and examines how valuation of energy assets can take into account political risk, and requirements to provide infrastructure and social services. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6230 - Political Risk Management for Global Energy Environmen (3 Credits)

The course examines public influence on energy business activities. Students will explore the economics of political action and methods for evaluating how stakeholder groups interact to influence political outcomes. They will use these tools to develop strategies for stakeholder engagement and to manage business risks. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEMM 6300 - Technical Aspects of Energy Science (3 Credits)

This course will familiarize students with the newest renewable and alternative energy sources. The course does not focus on hydrocarbon sources but examines challenges and opportunities that exist for the establishment of the new energy sources to become viable in the industry. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6400 - Leadership and Decision Making in the Global Energy Environment (3 Credits)

Students will examine leadership from an energy executive perspective. Topics include: how execs lead, change, innovation, interacting with top management teams, the board, leadership issues involved with governance of the firm, strategies for enhancing executive influence and ethics and responsibilities associated with exec. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6410 - People Management in the Global Energy Environment (3 Credits)

Explains that people are energy's most important asset. Students will learn the latest research in human resource theories, study models, and learn how to develop organizational effectiveness from the firm's human capital. Concepts on: effective teamwork, attracting and retaining talent and using HR processes such as performance management and development to drive engagement will be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6430 - Organizational Behavior in the Energy Industry (3 Credits)

Students will learn how to lead and manage human assets inside energy industries. Students will be exposed to fundamental principles of human behavior and increase their competence of working in diverse settings. Proper management can lead to a sustainable competitive advantage, because of management of employees and developing them into enthusiasts of your firm. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6450 - Strategic Management of the Energy Industry (3 Credits)

The course focuses on how to improve an organization's competitiveness in a changing global environment. Emphasis on sustainable strategies, students develop skills to formulate, implement and evaluate organizational strategies in the rapidly changing environment. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6460 - Integrated Information Management for Energy Firms (3 Credits)

This course covers issues associated with developing an integrated information managing strategy to identify major information categories used with an energy firm. It covers relationships to business processes to guide applications development and facilitate the integration and sharing of data. Using case studies from energy firms operational, administrative and strategic systems will be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6470 - Energy Marketing and Communications (3 Credits)

This course covers the challenges faced by energy industries in developing branding, and developing new markets. Marketing both products and the company to its stakeholders, in the face of competitive pressures, students learn practical marketing tools and how they can be used to effect corporate strategy. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6500 - Energy Accounting in the Global Markets (3 Credits)

The course builds a basic understanding of how to convey to decision makers, in and out of the firm, information about its resources. Emphasis on; analysis of income statements, balance sheet, statement and cash flows (historical financial accounting information) with specific coverage of cost-volume-profit, variance, forecasting, joint interest accounting and measurement of divisional performance. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6600 - Introduction To Financial Management In The Energy Industry (3 Credits)

Introduction to fundamental principal of asset valuation and financing in competitive global markets. Providing the tools necessary to analyze day-to-day financial issues in the energy industry (time value of money, valuation of income streams, risk weighted investment returns.) Topics such as: risk management, arbitrage, hedging and foreign exchange will be covered. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6610 - Advanced Financial Management in the Energy Industry (3 Credits)

This course is focused on understanding the costs and benefits of various forms of capital. By examining internal and external managers, students will be able to assess alternative capital sources to achieve their strategic objectives. The course will introduce effective investor communication techniques. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6620 - Energy Asset & Production Management for the Energy Industry (3 Credits)

The course covers management of an organization's energy resources and facilities as well as broader coverage of project management. Portfolio strategy, planning, scope, time, cost, quality and organizational effectiveness will be addressed. Also when budget, material, vendor relations or other factors disrupt a project, students will be prepared on how to react. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6630 - Commercialization Management of Renewable Energies (3 Credits)

This course will focus on the business aspects running a renewable energy entity either as a separate company or sector within an established company. Students taking this course have completed a previous course on the basic science of renewable energy. This course is intended to focus on leadership issues and decision making regarding renewable energy. As a significant part of the course, students will learn how to review information and data supplied to them by engineers, accountants, finance, marketing, scientists, and other stakeholders within and outside their company including federal, state, and local governments and regulatory agencies to make sound business decisions. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to GEMM majors within the Business School.

GEMM 6690 - Special Topics (1-3 Credits)

This elective course is intended to be a variable-credit course specially designed to provide national and international learning opportunities. The course will offer concentrated problem-solving experiences within the energy industry through travel to industry-significant cities and regions, while meeting and visiting with people working and dealing with issues in the industry. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEMM 6840 - Independent Study (1-3 Credits)

Allow students to gain additional experience in a particular realm of energy business that interest them and suit their ultimate career goals.

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Greek (GREK)

GREK 5840 - Independent Study - GREK (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS undergraduate advising office for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Health & Behavioral Sciences (HBSC)

HBSC 5999 - Topics in the Health and Behavioral Sciences (1-3 Credits)

An in-depth study of selected social science perspectives/theories and their applications to population health. Topics will vary from semester to semester, with a particular emphasis on current, salient population health problems. Prereq: Graduate standing or permission of instructor. Cross-listed with PBHL 4999. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HBSC 6320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HBSC 7320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6500 - Women and War (3 Credits)

Appraise women's experiences and selected issues related to war-time service, including women's roles during war, gender-specific policies, military sexual trauma, reintegration, and effects of deployment on mental and physical health. Restriction: Restricted to Graduate and Graduate Non-Degree major. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6840 - Independent Study: HBSC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences (1 Credit)

Features presentations by core, affiliated and adjunct faculty; alumni; distinguished guest speakers; and students nearing completion of the dissertation. The goal is to expose students to cutting-edge applications of health-related social and biological science research and to introduce students to the research interests of core and affiliated HBS faculty, advanced students, and alumni who they might otherwise not have the opportunity to meet. Note: Required for ALL first and second year students but open to all graduate students and faculty. May be taken up to three times for credit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Repeatable. Max Hours: 3 Credits. Grading Basis: Letter Grade Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

HBSC 7011 - Theoretical Perspectives (3 Credits)

Covers the following subject areas: philosophy and epistemology of the social and behavioral sciences as they are applied in public health and health care contexts; historical perspectives of Western biomedicine and public health; crosscultural perspectives on health systems; class, ethnic, and gender correlates of health and sickness; critical perspectives on Western health and health care models; and the structure and organization of health care systems. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7031 - Human Ecology and Environmental Adaptation (3 Credits)

Focuses on the interplay of biology, environment, culture, and behavior in the causes and exacerbation of disease. The course includes the following topics: health in environmental and evolutionary contexts; models of causation in biomedicine and other medical systems; individual, community, and population manifestations of health and disease; and biocultural interaction in disease process. Specific case studies drawn from contemporary health problems are used to illustrate in detail the nature of these processes. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I (3 Credits)

This course has four principal aims: (1) to provide students a working knowledge of research methodology as applied to field research efforts; (2) to enable students to apply research methodologies to areas of particular interest in the health and behavioral sciences; (3) to expose students to data manipulation techniques common to social science quantitative research; and (4) to teach basic research proposal development techniques. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Spring.

HBSC 7051 - Qualitative Research Design and Methods (3 Credits)

Much of the data collected in the social sciences is interview- and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences (3 Credits)

This course introduces students to multivariate regression methods - a set of statistical models that relate an outcome variable to a set of predictor variables. The course emphasizes understanding and applying regression models to address social science research questions. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

HBSC 7071 - Social and Behavioral Perspectives in Population Health (3 Credits)

Population health is an interdisciplinary or multidisciplinary field that focuses on the social and behavioral determinants of health. This course helps students to navigate the assumptions and perspectives of the various disciplines that do population health research. To achieve this, the course draws on literatures from diverse disciplines on topics including the social, economic, environmental, behavioral, political, and cultural factors that shape health, disease, and healthcare access and utilization. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7111 - Applications of the Health and Behavioral Sciences (3 Credits)

The purpose of this course is to help students select and refine a dissertation research topic. Each student, through presentations and discussions of their work, will receive feedback from fellow students and the instructor, and will have an opportunity to improve written and oral presentation skills. Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher or permission of the instructor. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher.

Typically Offered: Spring.

HBSC 7120 - Human Reproductive Technologies and the Law (3 Credits)

Examines the legal, ethical, and social issues that have come about with advances in assisted reproductive technologies (ART). Illustrates how lawyers, judges, bioethicists, legislators, and policy makers have addressed these issues. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

HBSC 7121 - Dissertation Proposal and Research (6-8 Credits)

Restriction: Restricted to Graduate Level Students admitted into the Health and Behavioral Sciences program. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Additional Information: Report as Full Time.

HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II (3 Credits)

This course introduces students to advanced multivariate regression methods (e.g., generalized linear models, survival models, hierarchical models). This course emphasizes the application of advanced regression methods to test social and behavioral science theories related to health.

Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

HBSC 7210 - Human Health and Environmental Pollution (3 Credits)

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 6210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Prereq: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with GEOG 4235, GEOG 5235. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 4080 or GEOG 5080

HBSC 7310 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. A basic statistics class is strongly recommended for optimal success. Cross-listed with ENVS 6230. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HBSC 6320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7340 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with CVEN 5494, ENVS 6200. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7360 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Restriction: Restricted to Graduate and Graduate Non-Degree majors. One year of college chemistry and one year of college biology are strongly recommended for optimal success. Cross-listed with ENVS 6220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7400 - Topics in the Health and Behavioral Sciences (3 Credits)

A flexible seminar format for dealing with topics of special interest in the health and behavioral sciences. Topics to be considered vary from semester to semester. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 8990 - Doctoral Dissertation (1-10 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the Health and Behavioral Sciences program. Term offered: fall, spring, summer. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Additional Information: Report as Full Time.

Health Administration (HLTH)

HLTH 5939 - Internship (1-3 Credits)

Grading Basis: Letter Grade

HLTH 6010 - Health Care Systems (3 Credits)

Introduces the structure and function of the medical care delivery system. Includes basic concepts and measures of health, disease, quality, values, needs and utilization; issues in health care manpower, institutions and system organization; general issues in policy, reimbursement and regulation; broad community, and organizational considerations in medical care organizations. The student is introduced to the principles of epidemiology and environmental health and demonstrates the application of epidemiology concepts to planning for the healthcare service needs of a population. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Typically Offered: Fall.

HLTH 6070 - International Health Policy and Management (3 Credits)

A framework for understanding national health reform policy and management issues in the U.S. and other nations, including industrialized, developing, and transforming nations. This course combines classroom and on-line teaching. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.
 Typically Offered: Fall.

HLTH 6071 - Introduction To Health Information Technology (3 Credits)

Examines what needs transforming in healthcare to improve value, safety, and appropriateness of care, and what the role of IT is in that transformation. IT also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested, and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with ISMG 6071. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD, MBAH and INFS majors within the Business School.
 Typically Offered: Spring.

HLTH 6072 - Management of Healthcare Information Technology (3 Credits)

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems, and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with ISMG 6072. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD, MBAH and INFS majors within the Business School.
 Typically Offered: Fall.

HLTH 6075 - International Health Travel Study (3 Credits)

Experiential course, which is designed to open students up to innovative health delivery practices in an international location. Students learn how health issues such as reproductive health, infectious diseases, mental health, health and economy, and chronic diseases are handled in community and public health settings. Class trips are usually 14-18 days to an Asian country during the month of January. Prereq: HLTH 6010 or permission of instructor. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6730 - Healthcare Operations Management (3 Credits)

Students in this course will obtain a comprehensive and practical examination of operations management with an emphasis on application to health care organizations. Students will use mathematical and basic spreadsheet skills to critically assess patient flows, volume projection, and supply chain management to improve the efficiency of service delivery in health care organizations. Detailed content on reducing cycle times (e.g., patient wait times), measuring productivity, streamlining process flows, tracking outcomes, staffing, and performance metrics will be presented in the course. Max hours: 3 Credits.
 Grading Basis: Letter Grade

HLTH 6740 - Profiles in Health Care (3 Credits)

This colloquium provides a rare opportunity for students to interact with top CEOs from health care organizations around the country. Students learn about HMOs, hospitals, medical group practices, consulting, managing careers, how to get jobs, and how to be successful in a job. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.
 Typically Offered: Spring.

HLTH 6770 - Healthcare Quality and Outcomes (3 Credits)

Studies the identification, measurement and improvement of healthcare quality. Covers, historic and contemporary views of quality, improvement theories and methods, organizational quality systems, leadership, patient safety, cost and quality, quality measurement and reporting, clinical outcomes, care redesign and medical terminology. Restriction: Restricted to HLAD and MBAH majors within the Business School. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6800 - Special Topics (3 Credits)

Offered irregularly. Current interests in the health management field. Topics recently offered include: international health, ethics, general systems theory, and key issues for health systems. Consult the current 'Schedule Planner' for semester offerings. Prerequisites vary according to topics and instructor requirements. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6840 - Independent Study: HLTH (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits.
 Grading Basis: Letter Grade
 Repeatable. Max Credits: 8.
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.

HLTH 6911 - Health Field Studies (3 Credits)

The objective of this course is to expose students to health care organizations with which they are not familiar. Each student is assigned to a health care organization and given a specific problem or project to complete. Prereq: HLTH 6010 or permission of instructor. After registration, please contact Errol.Biggs@ucdenver.edu for further instructions. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restrictions: Restricted to HLAD and MBAH majors within the Business School.

Historic Preservation (HIPR)

HIPR 6010 - Preservation Theory and Practice (3 Credits)

The practice of historic preservation has evolved in a specific policy context. This introductory course introduces basic American institutions and laws associated with preservation as well as standards, definitions, and practices associated with these. Cross-listed with URPL 6499. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to graduate majors within the College of Architecture and Planning or History graduate majors.

HIPR 6090 - Special Topics in Historic Preservation (3 Credits)
Various topics in historic preservation, according to current faculty and student interests. Prereq: HIPR 6010 or permission of instructor. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6110 - Regionalisms & the Vernacular (3 Credits)

This class explores the history of the built environment from the perspective of evolutionary change; peoples attempting to meet utilitarian needs, respond to environmental forces, societal expectations, and aesthetic aspirations through design. The course looks closely at vernacular structures in a global context. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6170 - Preservation Design Studio (6 Credits)

Preservation Design Studio provides a project-based learning experience for Historic Preservation students; who are typically integrated into a pre-approved studio of one of the College of Architecture & Planning's departments. Topics vary according to faculty interests. Cross-listed: Varies by semester. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to HIPR majors within the College of Architecture and Planning

HIPR 6210 - Historic Buildings in Context (3 Credits)

This course covers the concept of "historic significance" and develops skills in understanding and professionally utilizing this concept. Procedures and skills are introduced. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6233. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6220 - Adaptive Reuse: Business and Practice (3 Credits)

Existing buildings and infrastructure afford challenges and opportunities for reuse. This course explores the business, and financial aspects of adapting the built environment for contemporary uses. The course is suitable for designers, planners, historians and social scientists.

Restriction: Restricted to majors within the College of Architecture and Planning. Cross-listed with ARCH 6356. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6310 - Documentation, Analysis, Representation (3 Credits)

This methods course focuses on skills development in in-situ documentation of the historic environment. The course includes modules on: a) historic records, b) archaeological evidence, c) building and site measurement, d) photographic & photometric methods, e) geo-spatial data, f) graphic representation, and g) reporting formats. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6352. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6330 - The Politics of Preservation (3 Credits)

Achieving the preservation of historic properties requires an ability to effectively use legal tools and successfully articulate the case for preservation to a broad audience. Students will learn how to deploy the theories, tools, and techniques for the protection of historic properties.

Restriction: Restricted to Graduate students in a CAP program or Graduate students in the History Department. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate students in a CAP program or Graduate student in the History Department.

HIPR 6410 - Urban Conservation: Context for Reuse (3 Credits)

This course begins with the premise that human habitats, and especially cities, are dynamic and ever changing; and that the preservationist cannot (and should not try) to freeze cities in a static representation of the past. The course deals with both the philosophical and political contexts, but emphasizes the role of strategic design intervention in the shaping of evolving cities. This includes traditional preservation activities, but also recognizes the importance of progressive change.

Readings are diverse, but at least two case study cities are used to ground the concepts. Class activities include: a) research, b) field study, c) design, and d) presentation. Restriction: Restricted to graduate students in the College of Architecture and Planning. Cross-listed with ARCH 6355. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6510 - Building Materials Conservation (3 Credits)

This course emphasizes the relationship between knowledge acquisition, professional judgement, and design modification. Topics include: 1) Historic Building Types & Methods, 2) Field and Lab Methods of Building Assessment, and 3) Management of Building Rehabilitation. The course takes an integrative approach to the scientific, aesthetic, managerial and legal dimensions of preservation. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

HIPR 6610 - Reading the City (3 Credits)

Design and planning professionals, including preservationists, must learn to work in environments with which they have had little previous knowledge. This course emphasizes gaining understanding of a novel environment and translating that knowledge into a well researched and media savvy professional presentation. Students prepare a research plan, then conduct research on a relatively unfamiliar urban environment, such as Chicago (or other major city), returning to prepare, present, and critically reflect upon their applied research through a media-savvy final project. Prereq: HIPR 6410 is recommended. Cross-listed with ARCH 6232. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6840 - Independent Study (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6851 - Professional Project (1-3 Credits)

The Professional Project is one of two options for completing the Capstone Requirement. There are multiple ways of satisfying this requirement, but the agreed upon Project must show critically reviewed evidence of professional competence in the field of historic preservation. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6930 - Internship (3 Credits)

Designed to provide professional practice experience. The internship is composed of eight to twelve hours per week working in a professional preservation setting during the regular semester. Prereq: Permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

HIPR 6951 - Thesis (6 Credits)

Thesis is one of two options for completing the Capstone Requirement. Students may choose to develop a specialized thesis in some topic related to historic preservation. Prereq: LDAR 6949. Max hours: 6 Credits. Grading Basis: Letter Grade with IP

Restriction: Restricted to majors within the College of Architecture and Planning

Additional Information: Report as Full Time.

History (HIST)

HIST 5027 - Enlightenment and Revolution (3 Credits)

In this course students explore the relationship of ideas and events in Europe during the 17th and 18th centuries. Modernizing trends in the European economy, religion, science, states and international affairs leading up to the French Revolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 4027. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5028 - Nations and Classes: 19th Century Europe (3 Credits)

Focuses on material and ideological changes in 19th century Europe, exploring social, cultural, political, economic, and intellectual developments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4028. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5029 - Age of Anxiety in Europe (3 Credits)

Looks at Europe at the end of the nineteenth century in an effort to determine if there is any relation between the peculiarities in culture at the time and the horrors in politics that followed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4029. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5030 - Europe During the World Wars (3 Credits)

Covers the history of the two world wars and their origins, political and social upheaval during the interwar economic crisis, the rise of communism, Italian fascism and Nazism, with an emphasis on cultural production and intellectual life. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5032 - Globalization in World History Since 1945 (3 Credits)

An interdisciplinary course on contemporary world history and globalization. While the course is historically structured, economic, political, and sociological matters are explored. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4032. Term offered: fall, spring, summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring, Summer.

HIST 5035 - Crisis and Transformation: Europe's 20th Century (3 Credits)

This course examines 20th century European history focusing on themes of crisis and transformation. We will explore how devastating wars, economic depression, stark ideological divisions, and revolutionary social, political and cultural movements dramatically changed Europe over the course of the century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4035. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5046 - Victorians and Victorianism (3 Credits)

Taking an interdisciplinary perspective, this course examines English people and English life during the reign of Queen Victoria, 1837-1901. What were the defining features of the Victorian age? What did it mean to be "Victorian?" When and why did the Victorian paradigm break down?

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4046. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5051 - Britain and The Empire (3 Credits)

Examines 19th and 20th century British history, addressing social, cultural, and political themes. Explores industrialization, state growth, and imperialism; relationships between race, gender, and class; and the ways in which colonizers and the colonized experienced empire.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4051. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5055 - The Atlantic Slave Trade: Africa, Caribbean and U.S. (3 Credits)

Presents a broad overview of the slave trade in the Atlantic World, including discussion of the slave plantation, the creation of Caribbean societies and the consequences of independence from Britain.

Restriction: Restricted to Graduate Level students. Cross-listed with HIST 4055. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5062 - Modern France: 1789 to the Present (3 Credits)

Considers the shaping of modern France from the 18th century Bourbon Monarchy and aristocratic society to today's liberal democracy, in which multiculturalism, globalization and supranational institutions call into question the very nature of French identity. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4062. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5071 - Modern Germany (3 Credits)

Surveys the major political, institutional, social, economic, and cultural developments that have occurred in Germany since the late 18th century.

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4071. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5074 - Post-War Germany (3 Credits)

Historical survey of Germany since the second world war, with an emphasis on culture and society. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4074. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5075 - Travel Stories and Origins of Cultural Anthropology (3 Credits)

Examines the early history of cultural anthropology by means of classic travel literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4075. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5076 - History of Modern Science (3 Credits)

Surveys the history of science from the 18th century to the present. Treats all disciplines, from physics to physiology, in an attempt to understand how the natural world came to dominate our sense of ourselves. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4076. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5083 - Russia Since 1917 (3 Credits)

Studies the development of the Soviet Union from its formation in the October Revolution, through the Civil War, the new economic policy, industrialization, collectivism, the Stalinist purges, up to the present.

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4083. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5133 - Management of Material Culture and Museum Collections (3 Credits)

This course provides in-depth knowledge of the rudiments of material culture documentation, preservation and management. While we have designed this class for those interested in working in history museums, this is also appropriate for those students who want to learn the place of artifacts in studying history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4133. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5201 - Core Themes in U.S. History (3 Credits)

This course surveys major themes in U.S. history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4201. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5209 - Race, Religion, and Belonging (3 Credits)

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources #such as sermons, reality TV shows, court cases and graphic images as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation#state, thereby constructing the boundaries of the state itself. Cross-listed with ETST 4030, ETST 5030, RLST 4030, RLST 5030 and HIST 4209. Restriction: Graduate standing or instructor permission required to enroll. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5212 - Civil War and Reconstruction (3 Credits)

Begins with the causes and outbreak of the American Civil War, describes the military conflict and the social aspects of the war, and examines the federal efforts to reconstruct the southern states and protect the rights of Black citizens after 1865. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4212. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

HIST 5217 - Consumer Culture (3 Credits)

This interdisciplinary course examines the dynamics of the consumer culture in the context of social, economic, and technological history. The analysis begins with 17th century European origins, and continue through recent world developments, emphasizing the U.S. since 1800. Note: Open to all students. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4217. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5227 - American West (3 Credits)

Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West from prehistoric times to the present. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4227. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5229 - Colorado Historic Places (3 Credits)

Introduces community architecture, folklore, and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4229. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

HIST 5232 - Historic Preservation (3 Credits)

Introduces the history, methodology, and goals of historic preservation. Guest speakers, field trips, research projects, and book reports.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.
Cross-listed with HIST 4232. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5234 - History at Work: Public and Community History (3 Credits)

An overview of history outside the academic setting. Students have the opportunity to learn about jobs through on-site visits and presentations made by people engaged in a wide variety of occupations in history other than teaching. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4234. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5244 - Interpretation of History in Museums: Exhibits and Education (3 Credits)

This course allows students to gain in-depth knowledge of historical interpretation through exhibits and education in a museum setting. This class is designed for those preparing to work in history museums but is also appropriate for teachers and others who want to learn how museum programs interpret history with artifacts and other historical materials. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4244. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

HIST 5260 - Introduction to Digital Studies (3 Credits)

Develop marketable skills such as building websites, making interactive maps, recording podcasts, and analyzing data while also studying the cultural and ethical dimensions of these technologies. Cross-listed with HIST 3260. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Spring.

HIST 5261 - Data: A User Manual (3 Credits)

Teaches the technical skills of data collection, processing, analysis, and visualization, along with the history and ethics of how societies, corporations, and governments have used and abused data over time. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 4261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5307 - History of Sexuality (3 Credits)

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4307 and WGST 4307/5307. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5308 - Crime, Policing, and Justice in American History (3 Credits)

Focuses on changing legal and cultural definitions of crime, the role of the police, the evolution of punishment in theory and practice, and the role of mass culture in shaping the social history of crime and justice.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.
Cross-listed with HIST 4308. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5343 - Women & Gender in US History (3 Credits)

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with HIST 3343, WGST 3343, and WGST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5412 - Mexico and the United States: People and Politics on the Border (3 Credits)

Examines the convoluted relations between these two republics, focusing on diplomatic, cultural and social interactions. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4412. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5421 - Modern China (3 Credits)

Surveys Chinese history in the modern era. Includes examination of Western domination of China, revolution, and internal fragmentation of China; Japanese attacks and World War II; and civil war and the communist revolution. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4421. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

HIST 5455 - African Struggle for Independence (3 Credits)

An assessment of African leadership from the colonial era to the present.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4455. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5461 - The Modern Middle East (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4461. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5462 - Islam in Modern History (3 Credits)

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4462, RLST 4462, RLST 5462. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

HIST 5475 - The Vietnam War (3 Credits)

Covers the conflict in Vietnam, with roots in the period prior to World War II. Main topics include the rise of nationalism in French Indochina, the war against the French, the Northern moves to unify Vietnam, American intervention, and eventual victory of the Northern regime. Restriction:

Restricted to Graduate and Graduate Non-Degree majors. Cross-listed

with HIST 4475. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

Typically Offered: Spring.

Typically Offered: Spring.

Typically Offered: Spring.

HIST 5490 - Weapons of Mass Destruction (3 Credits)

Weapons of mass destruction have affected politics, health, and environments around the globe. This course will examine the development, use, and consequences of these modern technologies of war and terror. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HIST 4490. Term offered: summer, fall. Max Hours: 3 Credits.

Term offered: summer, fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Summer.

HIST 5494 - Red and Blue America: U.S. History, 1973-Present (3 Credits)

Surveys the major intersections of politics, culture, and society in American history since 1973. The course will be attentive to the diversity of American experiences and will explore both domestic and international themes in United States history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed HIST 4494. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HIST 5616 - Global History of Energy (3 Credits)

Explores the history of human energy use on local, national, and international scales, examining its social, political, and economic effects, and its implications for the environment. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with HIST 3616. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5621 - Explorers and Exploration (3 Credits)

Examines the history of travel and exploration from the 13th century to the present. Readings draw primarily from first-person accounts to understand why people voyage, what they hope to discover, and what happens to them along the way. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4621. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5622 - Oceans In History (3 Credits)

Explores transoceanic exchanges, relations, and transformations in modern world history. Examines how historians analyze and conceptualize global interactions. Topics include voluntary and forced migrations, resistance and revolution, transoceanic economic relations, piracy, and environmental change. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4622. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5645 - Archival Management (3 Credits)

This course studies theory and principles pertaining to the management of current and non-current records, public and private archival materials, as well as the administration of archival manuscript depositories for housing records of historical value. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4645. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5810 - Special Topics (1-3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HIST 4810. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 5840 - Independent Study: History (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

HIST 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6013 - Introduction to the Professional Study of History (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6840 - Independent Study: HIST (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HIST 6931 - Readings: Special Subjects in History (3 Credits)

Readings in topics in history with varying subtitles reflecting course content. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Term offered: fall, spring. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Term offered: spring, summer, fall. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Typically Offered: Fall, Spring, Summer.

HIST 6940 - Comprehensive Exam (1 Credit)

Preparation for and completion of comprehensive examination for History MA. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Max hours: 1 Credit.

Grading Basis: Letter Grade

HIST 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6951 - Masters Project: Advanced History Curriculum Development (1-6 Credits)

Students develop curricula for secondary-level history courses; must demonstrate thorough knowledge of subjects; understanding of historiographic and methodological problems; command of primary sources and their uses in teaching; and describe teaching strategies, methods, and assessments to be used in the curricula. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Permission of instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6952 - Master's Project: Public History (1-6 Credits)

Public history students may use one to six credits to complete a single public history project. Projects can entail creating an exhibit, organizing a museum or archival collection, conducting a preservation survey or similar activities. Students are required to prepare a paper describing the process and results of the project. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

HIST 6989 - Seminar: Special Subjects in History (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Term offered: fall, spring. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HIST 6992 - Seminar: Colorado Studies (3 Credits)

This advanced interdisciplinary seminar on Colorado starts with a survey of the published literature. Students then select a research topic of their own and complete a publishable paper using primary sources.

Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Human Development and Family Relations (HDFR)

HDFR 5002 - Family Life and Community Programming I (3 Credits)

This course teaches the principles, philosophies, models, and strategic methods of family life education for strengthening interpersonal and family relationships. Culturally competent students will learn about the development and implementation of effective educational programs and experiences within different community settings. Cross-listed with HDFR 4002. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5003 - Leadership and Organizations (3 Credits)

This course provides an understanding of leadership theory and practice in community and educational environments. Students will learn about important aspects about leading diverse community and educational organizations including staff supervision, strategic planning, advancing the organization and maintaining integrity. Cross-listed with HDFR 4003. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5004 - Family and Comm. Prog. II Grant Writing/Fundraising (3 Credits)

This course provides an understanding of developing skills on grant writing and fundraising as related to family, community and educational organizations/agencies. Students will learn about important aspects about grant writing, fundraising fundamentals and funding models for sustainability. Cross-listed with HDFR 4004. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5010 - Family and Cultural Diversity (3 Credits)

The examination of familial, gender, cultural, linguistic, social and other ecological factors on diverse family systems in the United States will be covered. An ecological theoretical analysis of minority family systems within a familial, educational and social justice perspective will be explored. Cross-listed with HDFR 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5020 - Black and Latino Children in Families and Schools (3 Credits)

With a focus on application of scholarship to practice, this interdisciplinary course will introduce graduate students to scholarly literature from family sciences, sociology, education and related fields to understand Black and Latino children within family, school and community systems. Restriction: Restricted to graduate level students. Cross-listed with ETST 5021. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

HDFR 5040 - Latino Families in School and Communities (3 Credits)

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latino families, schools and community systems and other critical issues that Latino family systems face in the United States. Cross listed with HDFR 4040. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5045 - Abuelos (Grandparents) Latino Families (3 Credits)

The course will focus on the social gerontology of Latinos families in later life. Specifically, the course will examine how ecological factors including familial, cultural, social, economic, health, cognitive and educational, impact the lives of Latino older person's in the contexts of family systems. Cross-listed with HDFR 4045. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5080 - Global Family Resource Management (3 Credits)

This course examines the allocation of family resources (social, financial and material assets), the influence of various ecological systems, the effect on family functioning and goal-setting from a global perspective. Practical applications for Family Relations professionals are included. Cross-listed with HDFR 4080. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5090 - Helping Profession Skills in HDFR (3 Credits)

This course is designed to provide an overview of essential skills required in a variety of helping situations and settings. Course content includes the development of accurate listening, empathy, reflection, and inquiry skills. Implications for working with individuals, families, and couples will be examined. Cross-listed with HDFR 4090. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5180 - Family and Community-Centered Classroom Practice (3 Credits)

This intensive course is designed to help teachers develop a responsive, collaborative, and theorybased understanding of the interaction of schools, families and the local community. In this course, you will examine the impact that various social interactions had on yourself, a student's family, and the community as a whole. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5260 - Family Systems Social Justice (3 Credits)

Relying on ecological systems theories, this course will introduce students to families and family systems. Students will investigate how families experience (in)justice in the areas of access to education, community services, and employment. Cross-listed with HDFR 4260. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5300 - Families in Later Life (3 Credits)

Students will become familiar with the importance of families in later life. Through family systems and ecological systems theories, this course is designed to provide an understanding of the importance of family relationships and implications for practice, research, and policy. Cross-listed with HDFR 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 5830 - Special Topics in Human Development and Family Relations (1-3 Credits)

Advanced study of special topics that examine community and educational settings in Human Development and Family Relations (HDFR) to be selected by the instructor. Repeatable. Max hours: 6 Credits

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

HDFR 6000 - Family Theories (3 Credits)

Students will examine the methods of inquiry and the basic foundations of contemporary family theory. Using a family systems perspective, students will utilize and analyze theory in the exploration of diverse and changing family dynamics in a societal context. Cross-listed with HDFR 7000. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 6075 - Family Policy and Law (3 Credits)

Theoretical and practical exploration of the process of policy-making, with particular attention to the role of courts, that impact families and children to provide foundations for research and advocacy related to family policy and law. Cross-listed with HDFR 7075. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 7000 - Family Theories (3 Credits)

Students will examine the methods of inquiry and the basic foundations of contemporary family theory. Using a family systems perspective, students will utilize and analyze theory in the exploration of diverse and changing family dynamics in a societal context. Cross-listed with HDFR 6000. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 7010 - Proseminar I in Child, Youth, and Family Studies (1 Credit)

This course aims to introduce students in the Child, Youth, and Family Studies PhD pathway to doctoral studies and to faculty research. The course is also designed to support students in situating themselves in the discipline, enhancing their scholarly identity, and refining academic writing and presentation skills. Cross-listed with ECED 7011 and EDUC 7011. Max Hours: 1 Credits.

Grading Basis: Letter Grade with IP

HDFR 7020 - ProSeminar II in Child, Youth, and Family Studies (1 Credit)

This course is for 2nd year students in the Child, Youth, and Family Studies PhD pathway. The course is designed to support students in developing a research agenda, exploring ethics in research, enhancing scholarly identity, and preparing for comprehensive examinations. Prereq: HDFR 7010 or ECED 7011 or EDUC 7011. Cross-listed with EDUC 7020 and ECED 7020. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFR 7010 or ECED 7011 or EDUC 7011.

HDFR 7030 - ProSeminar III in Child, Youth, and Family Studies (1 Credit)

This course aims to provide third year doctoral students in the Child, Youth, and Family Studies PhD pathway with an immersive writing opportunity and professional development experience to help prepare for comprehensive examinations, the dissertation, and post graduate school life. Prereq: ProSem I and ProSem II (HDFR 7010 or ECED 7011 or EDUC 7011 & HDFR 7020 or EDUC 7020 or ECED 7020). Cross-listed with EDUC 7030 and ECED 7030. Max hours: 1 Credit.

Grading Basis: Letter Grade with IP

Prereq: HDFR 7010 or ECED 7011 or EDUC 7011 AND HDFR 7020 or ECED 7020 or EDUC 7020.

HDFR 7050 - Special Topics in Human Development and Family Relations (1-6 Credits)

Advanced study of special topics in human development in family, community and educational settings in HDFR, to be selected by the instructor. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HDFR 7075 - Family Policy and Law (3 Credits)

Theoretical and practical exploration of the process of policy-making, with particular attention to the role of courts, that impact families and children to provide foundations for research and advocacy related to family policy and law. Cross-listed with HDFR 6075. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 7100 - Family Issues in Immigration and Migration (3 Credits)

Exploration of family issues related to immigration in the US context, including how policies shape emigration and immigration of families. Focus will be on social, cultural, political, and economic factors related to early childhood, parenting, adolescent identity, marriage and family formation, health and wellbeing and integration in the US. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

HDFR 7240 - Latin@ Families in Schools and Communities (3 Credits)

This course will use ecological systems theory perspectives as a foundation for understanding diverse Latino family dynamics, the intersection between Latin@ families, schools and community systems, mental health systems, and other critical issues that Latin@ family systems face in the United States. Max hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 7260 - Family Diversity and Social Justice (3 Credits)

Through this course, students will explore theory and research on the family, using interdisciplinary research and theory to inform their knowledge and generation of questions that recognize the challenges faced by diverse families in a shifting societal and national environment. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

HDFR 7270 - Advanced Study of Human Development (3 Credits)

This course is an intensive overview of major theories undergirding the study of human development. The emphasis is upon broad ecological theories that cut across different aspects of human development, including social and emotional development, cognition, and achievement within contemporary societal social structures. Max Hours: 3 Credits.

Grading Basis: Letter Grade

HDFR 7840 - Human Development and Family Relations Independent Study (1-6 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

Humanities (HUMN)

HUMN 5000 - 19th and 20th Century Continental Philosophy (3 Credits)

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4000/5000 and SSCI 5000. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5013 - Methods and Practices of Graduate Interdisciplinary Humanities (3 Credits)

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate Level Students. Cross-listed with PHIL/SSCI 5013. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

HUMN 5020 - Foundations and Theories of Interdisciplinary Social Science (3 Credits)

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical, key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5025 - Foundations and Theories of Interdisciplinary Humanities (3 Credits)

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5025. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5101 - Pragmatism: Classical American Philosophy (3 Credits)

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4101, 5101, SSCI 5101. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5220 - Aesthetics and the Philosophy of Art (3 Credits)

Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4220/5220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5242 - Bioethics (3 Credits)

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, SSCI 5242. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5251 - Introduction to Legal Studies (3 Credits)

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4251/SSCI 4251/SSCI 5251. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5325 - First Amendment: Theory and Context (3 Credits)

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, SSCI 4325, SSCI 5325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5540 - Law, Diversity and Community in United States History (3 Credits)

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5540. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5600 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4600, 5600, RLST 4060, 5060, and SSCI 5600. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5660 - Visual Arts: Interpretations and Contexts (3 Credits)

Provides graduate-level interdisciplinary study in the historiography, methodologies, and theories used to understand how visual arts, including painting, sculpture, photography, film and performance art influence the making of culture. Students gain critical skills for analyzing a variety of visual and aesthetic products of culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5720 - Sexuality, Gender and Their Visual Representation (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5770 - Imperialism, Post-Colonial Theory & Visual Discourse (3 Credits)

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-list SSCI 5770. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5833 - Existentialism (3 Credits)

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4833/5833 and SSCI 5833. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5840 - Independent Study: HUMN (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HUMN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

HUMN 5920 - Philosophy of Media and Technology (3 Credits)

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, SSCI 5920. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 5924 - Directed Research and Reading in Interdisciplinary Humanities (3 Credits)

The first of the Master of Humanities core courses, this course provides beginning graduate students grounding in critical theorists, key analytic models, and their application in disciplines which comprise the humanities (philosophy, literature, art history, visual studies, history, communication) for the purpose of graduate-level, interdisciplinary humanities research. Examines questions about reality, knowledge, ethics that affect research and writing in the humanities. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Term offered: spring, fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

HUMN 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933, WGST 4933/5933 and SSCI 5933. Max Hours: 3 Credits.

Grading Basis: Letter Grade

HUMN 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

HUMN 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

HUMN 5960 - Master's Project (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

HUMN 5984 - Topics: Interdisciplinary Humanities (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HUMN 6010 - Methods and Theories of Feminism and Gender (3 Credits)

This course provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender, and sexuality studies and considers how culture is constructed around these categories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with WGST and SSCI 6010. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Information Systems (ISMG)

ISMG 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Repeatable. Max hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

ISMG 6020 - Programming Fundamentals with Python (3 Credits)

This course is designed to provide a thorough introduction to Python and fundamental programming concepts like data structures, networked application program interfaces, files and databases. Principles of object-oriented programming and secure programming practices are demonstrated using programming constructs taken from the business domain. Students are required to design and create their own applications for data retrieval, processing, and visualization. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6028 - Travel Study Topics (3 Credits)

Join your classmates in an international travel study course to understand the business operations of another culture. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6040 - Business Process Management (3 Credits)

Designing effective information systems for business requires an awareness of the organization(s) business processes and how to manage and streamline them. The objectives of the course are for students to understand the importance of business processes; the main types of business processes; and the evolution of business process management; business process outsourcing; business process re-engineering; business process redesign; technology enabled business processes; and automated workflow. An important activity is graphically mapping business processes, which are transformed into an application or set of applications. The organization needs to manage the electronic workflow to monitor that the work gets done and allow changes to the workflow. Case studies of organizations are studied for most topics to enhance understanding. The group projects let students apply their knowledge of the course to a specific organization. By the end of this course students should have an appreciation of the important process-centric issues in business systems design. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6060 - Analysis, Modeling and Design (3 Credits)

Provides an understanding and application of systems analysis and design processes. Students are exposed to system development life cycle (SDLC), structured systems analysis and design methods, object-oriented analysis and design methods, prototyping and commercial off-the-shelf package software approaches, and joint and rapid application development. Emphasizes the skills required for system analysts such as analytical, interpersonal, technical, fact-finding, and project management skills. Topics include data, process and object modeling, input-output and user interface design, and systems implementation and support. To provide an opportunity to develop these skills, an information system project is completed by a group of students. Students use a Case tool for their group project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6071 - Introduction to Health Information Technology (3 Credits)
Examines what needs transforming in healthcare to improve value, safety and appropriateness of care, and what the role of IT is in that transformation. It also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with HLTH 6071. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6072 - Fundamentals of Health Information Technology Management (3 Credits)

Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems and the methodologies deployed to acquire and manage information requirements are discussed. Cross-listed with HLTH 6072. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6080 - Database Management Systems (3 Credits)

The success of today's business often hinges on the ability to utilize critical information to make the right decisions quickly and efficiently. Transforming mountains of data into critical information to improve decision making is a skill every business decision maker must possess. This focus course covers the database design topics with a focus on enabling business decision making. Detailed topics include collecting, capturing, querying and manipulating data (using SQL and QBE) for simple to medium complex business applications. Commercial database products are utilized to demonstrate the design of database applications in management, marketing, finance, accounting, and other business areas. Students will be able to design and implement simple to medium complex database applications after successful completion of this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6120 - Network Design and Analysis (3 Credits)

Communication, knowledge sharing, and information acquisition within and between businesses are critical for long term strategic business success. Technological advancements are radically changing the way business communication and knowledge sharing are performed. This course will briefly examine the traditional concepts of local and wide area networks for reference purposes, but then will focus on how newer technologies are changing business practices. Traditional local and wide area network concepts that will be covered in this course include WiFi wide area networks, wireless local area networks, cellular networks, and additional supporting services. Newer technologies that will be covered include social computing, Internet of Things, and artificial Intelligence. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6180 - Information Systems Strategy (3 Credits)

Digital strategy is the application of digital technologies to business models to form new differentiating business capabilities. The course starts with the highlights of genesis and importance of IT in organizations, including the relationship between digital technology and competitiveness. Then, the development and management of an effective digital infrastructure are discussed. Realizing that the effective use of digital technology requires the alignment of competitive strategies, business processes, and applications, the course takes a top management perspective on the development of policies and plans that maximize the contribution of digital technologies to organizational goals. A broad overview of how systems support the operational, administrative, and strategic needs of organizations is covered. Cross-listed with BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall, Spring, Summer.

ISMG 6200 - Global Information Systems (3 Credits)

Will focus on managing information technology globally and the new organizational and information technology designs that firms are establishing to meet the ever-growing global requirements. The course will cover such issues as how information is used and how information technology is deployed by multinationals in different countries, the state of information technology and telecommunication industries in countries around the world, how global firms gain strategic benefits from information technology, and how firms manage and use global virtual teams. Prereq: ISMG 6040 or 6120 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6220 - Business Intelligence Systems and Analytics (3 Credits)

This course covers business intelligence, analytics, and artificial intelligence technologies and is organized around three types of analytics that are enabled by those technologies: descriptive, predictive, and prescriptive analytics. The theme of artificial intelligence runs throughout the course from business intelligence, to machine learning and deep learning as applied in areas such as computer vision, autonomous vehicles, and robots. The topics will be discussed using concepts and theory, business cases and applications, and hands-on analysis or model building using datasets available in the public domain, with the hands-on analysis and model building being the focus of the course. Students will use a leading BI software and a cloud computing platform to perform analysis and build machine learning models. Note: The recommended prerequisite for this course is ISMG 6080. If you are familiar with SQL and have worked with databases in the past, you satisfy the prerequisite requirement for this course. Cross-listed with BUSN 6812/ISMG 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring, Summer.

ISMG 6240 - Website Development Practice and Technologies (3 Credits)

Presents a broad coverage of design principles and techniques to develop effective web sites. The course emphasizes: (1) understanding the principles of web page and web site design and the process of publishing web pages, (2) developing client-side scripts for use in web sites, (3) using server-side programs or scripts to develop dynamic web sites using databases, and (4) understanding technologies for managing large web sites including XML schemas, content management systems and web services. If you have relevant experience in database and programming please contact the instructor for permission to waive the prerequisite of ISMG 6020. Prereq: ISMG 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6020. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Typically Offered: Fall.

ISMG 6280 - Service Oriented Architecture (3 Credits)

Explores "Service Oriented Architecture" (SOA), which refers to a design pattern made up of components and interconnections that stress interoperability and location transparency. Covers the latest heterogeneous models for carrying out large scale distributed computing using Web services. The fundamentals of defining, designing, building, testing and rolling-out a SOA system are explored using tools from major Web service vendors. Also, looks at the impact of SOA on software quality, efficiency, performance and flexibility. Prereq: ISMG 6020. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6320 - Innovative Health Information Technologies (3 Credits)

Learn how innovative health info technologies shape and redefine healthcare by enhancing medical care through scope and scale effects, providing tech efficiencies in delivery of care, utilizing advance tools for patient Ed and self-care, network-integrated decision support, e-business models & opportunities for e-health. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6340 - Cloud Computing Concepts, Tools, and Security (3 Credits)

This course provides an introduction to cloud computing concepts, capabilities, and scenarios where cloud computing technology can be leveraged. Students will learn the basic building blocks of cloud computing, investigate the various types and models of cloud computing, and identify how businesses can implement these technologies. This class uses hands-on labs to give students real-world practice on how to configure and secure a cloud computing environment. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6420 - Global Enterprise Systems (3 Credits)

Examines the evolution of global enterprise systems - from internally focused enterprise resource planning (ERP) client or server systems to externally focused eBusiness. Studies the types of issues managers need to consider in implementing cross-functional integrated enterprise systems. Examines the general nature of global enterprise computing, re-engineering principles and the technical foundations of client or server systems and enterprise information architectures. Students learn about the global enterprise systems marketplace. Topics include the tools and methodology, modules, processes and industry initiatives. Finally, the course looks into the future and predicts enterprise system trends. The objective of the course is to make students aware of the potential and limitations of global enterprise systems. The objective will be reached through case studies, lectures, guest speakers and a group project.

Coreq: ISMG 6180 or BUSN 6610. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits. Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6430 - Information Systems Security and Privacy (3 Credits)

Designed to develop knowledge and skills for security of information and information systems within organizations. Focuses on concepts and methods associated with planning, designing, implementing, managing, and auditing security at all levels and on all systems platforms, including enterprise systems. This course presents techniques for assessing risk associated with accidental and intentional breaches of security as well as disaster recovery planning. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course or during the same term as you take this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6450 - IT Project Management (3 Credits)

Focuses on how firms successfully manage the adoption of It. Projects and program management principles are the primary focus of this course. Topics covered include approaches to prioritizing projects, estimating cost and time-to-market, build vs. buy decision, planning, monitoring and controlling implementation, measurement, total cost of ownership, effective management of both behavioral and technical aspects of the project and change management. For the best outcome it is recommended that you complete ISMG 6180 or BUSN 6610 prior to taking this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6460 - Emerging Technologies (3 Credits)

Provides an introduction to the expansive array of information technologies that form the infrastructure of a modern business enterprise. Emphasis is placed on learning conceptual technological foundations and understanding the business value of the various technologies. The purpose of the course is to develop the student's ability to discuss recent technological advancements with other It professionals and management. Technology assessment is emphasized. Prereq: ISMG 6180 or BUSN 6610 (6810). Restriction: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Cross-listed with BUSN 6800. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6180 or BUSN 6610 Restriction: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Typically Offered: Fall.

ISMG 6470 - Text Data Analytics (3 Credits)

This course covers algorithms and tools that are required to perform quantitative analyses of unstructured text data. Concepts and algorithms that will be covered include Zipf's Law, Power Law Distribution, Pattern Discovery, Inverse Document Frequency, measurements of Document Clustering and Similarity and so on. R will be introduced as a practice tool to practice quantitative analysis of text data. After the completion of this course, students will be able to uncover and visualize underlying themes and concepts which might be latent in large text documents. Note: The recommended prerequisite for this course is ISMG 6020. If you are familiar with programming and have worked with programming languages in the past, you satisfy the prerequisite requirement for this course. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6480 - Data Warehouse and Administration (3 Credits)

Management of large, complex data warehouses and operational databases involves technical skills and background needed by information systems professionals as well as tactical and strategic issues faced by information technology managers. This course provides conceptual knowledge, practical skills, and policy background for prospective information systems professionals and information technology managers. The course covers business aspects, conceptual background, and product material about management of data warehouses and operational databases. Assignments and projects involve Oracle skills for database administration and tactical or strategic issues faced by information technology management. Prereq: ISMG 6080. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6080 Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6510 - Accounting and Information Systems Processes and Controls (3 Credits)

Designed to develop knowledge and skills used to understand and evaluate corporate accounting processes and systems. Focuses on financial and information system internal controls and the flow of corporate information through an accounting system. A financial system objective and risk assessment approach issued to present concepts and techniques for evaluating the adequacy of system processes and controls. Cross-listed with ACCT 6510, 4780 and ISMG 4780. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6800 - Special Topics (3 Credits)

A variety of advanced topics are offered in this course. Past topics include the human-computer interface, software engineering, artificial intelligence, graphical user interface, project management and electronic commerce. Consult the current 'Schedule Planner' for semester offerings. Note: Seldom offered. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6810 - Business Intelligence in Healthcare (3 Credits)

Provides students with an overview of how business intelligence is used in the healthcare industry. Students study the evolution of IT in healthcare including digitization of electronic health records and systems integration. Next the course looks at healthcare transformation and the evolution of business intelligence in general. Using case studies and hands on exercises, students learn about different aspects of business intelligence in various subsets of the healthcare industry. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Fall.

ISMG 6820 - Business Intelligence and Financial Modeling (3 Credits)

This course will introduce students to the application of business intelligence in a corporate finance setting. Financial data intelligence is essential for effective decision making throughout the firm, in finance directly and in other functions supported by the finance department. Strategy setting, budgeting, and new product development are just a few decision areas where finance personnel play an active role. In this course, we learn how to apply business intelligence software tools to enable finance personnel to access and analyze corporate data in support of critical decision making across the enterprise. Students will also analyze data through the use of financial models built in Microsoft Excel. The development of complex financial models will provide students with valuable hands-on experience with a software tool used widely incorporate finance departments. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Cross-listed with ISMG 4750 and FNCE 4750. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Typically Offered: Spring.

ISMG 6830 - IT Governance and Service Management (3 Credits)

Deals with interrelated decisions on clarifying the business role of IT, defining integration and standardization requirements for the IT architecture, shared and enabling services for the IT infrastructure and business need for SaaS, and governance of cloud computing, IT outsourcing, and other IT services. Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6840 - Independent Study: ISMG (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 6850 - Securing the Enterprise (3 Credits)

This course provides the knowledge required to analyze the current enterprise environment in order to prepare a risk mitigation for security vulnerabilities encountered. Topics include principles and concepts; threats, vulnerabilities, risks, attacks and controls; risk process and management; and enterprise security policies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6855 - Protecting the Enterprise (3 Credits)

This course examines methods and techniques used to secure an enterprise's environment. Topics include threat prioritization and mitigation; social engineering and security policies; encryption and cryptography; virtual private networks, wireless and mobile device management; antivirus, intrusion detection and protection systems; and firewalls and proxy servers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6860 - Ethical Hacking Concepts and Methodologies (3 Credits)

From a technical perspective, organizations need to know how hackers work so that they can build their security around it and take preemptive measures against future attacks. The goal of the ethical hacking is to understand current exploits, and assess weaknesses and vulnerabilities of various organizational information systems by attacking them within legal limits. This course is designed to provide students an insight of current hacking tools and techniques used by hackers and security professionals to break into any computer systems. Throughout the course, students will engage in offensive and defensive hands-on exercises stressing ethical hacking and penetration testing that will be conducted in a vendor-neutral virtual environment. Topics include security threats and attack vectors, footprinting and reconnaissance, network scanning and enumeration techniques, vulnerability assessment, system hacking, malware threat analysis, social engineering, attack and defense strategies in emerging technologies. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6865 - Digital Forensic Analysis (3 Credits)

This is an introductory course in collecting, examining, and preserving evidence involving digital devices. This course examines the issues, tools, and control techniques needed to successfully investigate illegal or malicious activities facilitated through the use of information technology. The tools of collecting, examining, and evaluating data in an effort to establish intent, culpability, motive, means, methods, and loss resulting from these crimes will be examined. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6870 - Securing Information Assets (3 Credits)

This course concentrates on the identification of information assets and the techniques used to protect them from unauthorized access. Topics include laptops, desktop and server vulnerabilities; network vulnerabilities; extranet and intranet management; incident response and management; web site and web services management; virtualization in the data center; and cloud computing security. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6875 - Protecting Information Assets (3 Credits)

This course illustrates how information assets can be subjected to internal and external attacks and presents techniques used to secure them from unauthorized access. Topics include sub-networking for guest and vendor access; managing mixed operating system environments; data at rest and data in-transit; database inference; network management systems and security; information assurance tools and techniques.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6880 - Intrusion Detection and Incident Response (3 Credits)

A topic of increasing importance and interest in the world of information systems and business is malicious intruder detection and the response procedures required to secure business systems once an intrusion has occurred. It is critical that the organizations dependent on information technology have incident handling procedures when computer intrusions occur. By having proper incident response procedures, organizations can quickly recover from intrusions and where feasible bring perpetrators to justice. This course will provide the student the opportunity to learn about the elements that comprise Intrusion Detection and Incident Response. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6885 - Ethics: A Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, MGMT 6420, ISMG 4785. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

ISMG 6890 - IT Risk Management (3 Credits)

This course provides an overview of IT risk management practices. Students will learn the elements of risk management and the data necessary for performing an effective risk assessment. Various risk management models will be introduced to demonstrate the methods that can be implemented to achieve Confidentiality, Integrity, and Availability of information systems. This class uses hands-on labs to give students real-world practice utilizing Security Information and Event Management (SIEM) software to gain an understanding of how to detect and respond to a cyber threat. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6895 - Digital Forensic Analysis II (3 Credits)

This course examines advanced digital forensic analysis topics, tools, techniques, and control mechanisms. Advanced topics include operating system artifacts, anti-forensics, mobile and embedded devices, and volatile memory forensics. Students will gain experience with state-of-the-art forensics tools and techniques needed to successfully investigate illegal activities perpetuated through the use of information technology.

Prereq: ISMG 6860 and ISMG 6865. Restriction: Restricted to Graduate Business School students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ISMG 6860 and ISMG 6865 Restriction: Restricted to Graduate Business School students

ISMG 6910 - Design Science Practicum (3 Credits)

This is designed to be one of the final courses in the MS Information Systems degree. "Design Thinking" with user-centered perspectives will serve as a guiding principle to challenge assumptions and refine business problems to perform the final project. The instructor will provide students with tools and methods to identify, define and solve problems. Active discussion and creative presentation are core activities of this capstone course. Students will integrate what they have learned into a final project that can be either real-world problem designed in collaboration with an organization or a research paper on an emerging topic in the field. The final project will have multiple deliverables including a paper and a professional presentation to stakeholders who are directly related with the business problems defined in the project. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

ISMG 6950 - Master's Thesis (1-8 Credits)

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors

Additional Information: Report as Full Time.

ISMG 7001 - AI-Based Decision Making (3 Credits)

Introduces decision making concepts. It covers a range of approaches, techniques and tools for decision aiding and describes how they can be used to support decision processes. The topics include human decision making, decision support systems, knowledge-based systems, and AI methods that support decision making, like machine learning, Bayesian networks and association rules. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7002 - Computer Security (3 Credits)

A broad overview of computer security, roughly divided into three unequal components: a) the history of codes and ciphers; b) basic cryptographic techniques, for example, symmetric cryptography, authentication techniques, and asymmetric cryptosystems, and: c) applications to current and future computer-related technologies, for example, network security, wireless communication, quantum cryptography, and more.

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7002. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7200 - Advances In Management Information Systems (3 Credits)

Provides an introduction to research methodologies engaged in Management Information System Research, including measurement, sampling, survey research, experiments, quasi-experiments and some qualitative research methods. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7200. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

Typically Offered: Fall.

ISMG 7208 - Philosophy of Information Systems Research (3 Credits)

This course surveys the philosophical foundations that underlie the development of IS theories, research methods and measurements. The focus is placed on intensive and rigorous readings and critiques of key literature at the intersection of philosophy, sociology, history and information systems. Upon the completion of this course, students are expected to have enhanced capabilities to discern the ontological and epistemological boundaries of various IS theories and research methods so that they can carry out IS research with informed knowledge.

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7210 - Topics In Analytical Research In Management Information Systems (3 Credits)

Provides a detailed coverage of selected analytical research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7211 - Topics In Behavioral and Organizational Research In Management Information Systems (3 Credits)

Provides a detailed coverage of selected behavioral and organizational research in information systems. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7211. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7212 - Strategic and Organizational Research in IS (3 Credits)

This course examines concepts in information technology with an emphasis on organizations, organizational strategy, and competitive advantage. Using a seminar method, students will be introduced to foundational concepts and current knowledge in the IT-based research areas of information and organizational economics, boundaries and markets, firm performance, organizational capabilities, innovation, organizational design and management mechanisms, and the challenges to achieving competitive advantage over competitors. Through completion of this course, students should acquire the ability to evaluate organization-focused IT research and identify valued questions that can be examined in future research. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7214 - Mixed Methods Research (3 Credits)

This course focuses on techniques for designing and executing mixed methods research in information systems area. Students will review the philosophical foundations of both qualitative and quantitative foundation. Basic practice, effective use and avoidance of pitfalls in mixed methods approach will be discussed. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7220 - Research methods: Design and Analysis (3 Credits)

Research methods: Design and Analysis. Topics include: research design, approaches to gathering data; sampling methods; linear multivariate analysis methods emphasizing structural equations models; and a brief survey of other methods such as cluster analysis, multidimensional scaling, methods such as neural nets, CART and/or genetic algorithms. While much of the material is of general interest, the course emphasizes methods and situations to prepare students in the CS/IS Ph.D. program for research in their field(s). The course includes student projects involving the analysis of data using appropriate software, whose results are presented to the class. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with DSCI 6220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7551 - Parallel and Distributed Systems (3 Credits)

Examines a range of topics involving parallel and distributed systems to improve computational performance. Topics include parallel and distributed programming languages, architectures, networks, algorithms and applications. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7551. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7552 - Advanced Topics in Parallel Processing (3 Credits)

Examines the advances of sequential computers for gaining speed and application of these techniques to high-speed supercomputers of today. Programming methodologies of distributed and shared memory multiprocessors, vector processors and systolic arrays are compared. Performance analysis methods for architectures and programs are described. Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors. Cross-listed with CSCI 7552. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to PhD majors within the Business School and within the College of Engineering, Design and Computing, PHCS PhD majors and PHIS PhD majors.

ISMG 7574 - Advanced Topics in Operating Systems (3 Credits)

Covers the advanced topics in operating systems by examining functionality and performance issues in CPU Scheduling, communications, distributed file systems, distributed operating systems, shared-memory multiprocessors and real-time operating systems. In addition to studying papers, reviews, and presentations, students carry out a semester long team project within the scope of one of the above topics. Prereqs: CSCI 3453 or CSCI 5573. Cross-listed with CSCI 7574. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7582 - Artificial Intelligence (3 Credits)

Approaches to design of systems for solving problems usually solved by humans, especially those related to intelligent decision making. Emphasis on various types of knowledge representation. Cross-listed with CSCI 7582. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7654 - Algorithms For Communication Networks (3 Credits)

Algorithmic and mathematical underpinnings of communication networks. A taxonomy of data-packet networks depending on modes of communication: Fixed-Interconnection networks, radio networks and multiple-access channel. Algorithms to implement packet routing, broadcasting and conflict resolution. Prereq: CSCI 5451. Cross-listed with CSCI 7654. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7765 - Computer Networks (3 Credits)

An in-depth study of active research topics in computer networks. Topics include: Internet protocols, TCP/UDP, congestion and flow control, IP routings, mobile IP, P2P overlay networks, network security, performance, and other current research topics. Prereq: Graduate Standing. Cross-listed with CSCI 7765. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7799 - Topics in Network Computing (3 Credits)

Studies the active research topics in network based computing such as Cluster, Grid computing, P2P Computing, Pervasive Computing. Workflow system and Cloud Computing. Students will study key papers in the literature, and submit a research term project. Prereq: Graduate Standing. Cross-listed with CSCI 7799. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 7800 - Special Topics (3 Credits)

A variety of advanced topics are offered at the Ph.D. level in this course. Consult the current 'Schedule Planner' for semester offering. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Typically Offered: Spring.

ISMG 7840 - Independent Study: Pre-Dissertation Research (1-9 Credits)

Conduct pre-dissertation research under the supervision of a faculty member. Prereq: BUSN 6530. Repeatable. Max Hours: 18 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 18.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

ISMG 8990 - Dissertation Development (1-15 Credits)

Supports development of a dissertation in conjunction with a student's advisor. Prereq: Completion of first year and second year papers (ISMG 7840). Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors. Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 15.

Restrictions: Restricted to graduate majors within the Business School, graduate majors within the College of Engineering, Design and Computing, PHCS PhD majors and PhD majors.

Additional Information: Report as Full Time.

Initial Teacher Education (ITED)

ITED 5022 - Learning and Classroom Management Strategies for Secondary Schools (3 Credits)

Provides knowledge to create and manage classrooms conducive to the well-being and learning of a diverse student population. Included are instructional strategies for addressing content standards, managing curriculum, instruction, assessments, classrooms, and individual behaviors. Max hours: 3 Credits.

Grading Basis: Letter Grade

ITED 5023 - Literacy Strategies for Secondary Schools (3 Credits)

Provides knowledge and practice using specific literacy methods and assessment, to enhance content learning, and meet reading and writing standards. Instructional strategies for special needs and language-minority students are also emphasized. Max hours: 3 Credits.

Grading Basis: Letter Grade

ITED 5025 - Reading Instruction and Assessment K-5 (3 Credits)

Using and expanding upon background knowledge from prerequisites, participants learn about specific reading instruction and assessment routines and techniques. Through guided in-school placements, student's link course readings, discussion and practice, focus on improving their instruction, and the assessment or instruction cycle. Prereq: ITED 5000, 5010 and 5020. Max hours: 3 Credits.

Grading Basis: Letter Grade

ITED 5800 - Special Topics in Education (1-4 Credits)

Addresses a specific topic that is current and relevant to the needs of a specific group of educators and/or an educational context. Repeatable.

Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

ITED 5840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Instructional Technology (INTE)

INTE 5000 - Maker Studio (3 Credits)

The maker studio is a collaborative practicum within the context of makerculture, projectbased learning, and learning experience design. The course focuses on the practical translation of learning design theory to learning design reality, presenting learners with challenges to be resolved with creative solutions. Cross-listed with INTE 4000. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5100 - Learning Experience Design (3 Credits)

Instructional design is the process used to analyze, design, develop, and evaluate learning solutions. You will identify a gap in learning or performance and design a learning solution in the form of courses units, modules, and other instructional resources. Cross-listed with INTE 4100. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5150 - Engaging in Education Advocacy (3 Credits)

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 7150. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5200 - Designing Online Learning Experiences (3 Credits)

This course helps educators transition to teaching online. Create online learning activities, assessments, and resources. Learn how to establish a strong online teaching presence. Explore blended learning environments, use of set curriculum, open educational resources (OER), family support, communication strategies, digital citizenship, and accessibility concerns. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5250 - Teaching Strategies for Online and Blended Learning (3 Credits)

This course provides a foundation for effective online teaching strategies. Learning essentials include: affording more reflective, engaging, inventive, and successful online learning experiences; fostering improved presence; employing skilled management techniques; and unpacking tools, habits, and processes for effective learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5300 - Media Literacy & Digital Citizenship (3 Credits)

In this course students learn to create, use, extend, and evaluate media products to support decision-making and real world problem-solving. Students also become more aware of the significant role of mass media, popular culture, and digital media in our lives. Cross listed with INTE 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5320 - Games and Learning (3 Credits)

This course examines the use of games for learning and education across formal and informal environments. Students will survey contemporary learning theory, media, trends, and challenges related to designing and playing games in informal, community-based, online, and school settings. Cross listed with INTE 4320. Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 5340 - Learning with Digital Stories (3 Credits)

This course reviews the uses of digital storytelling for learning. Develop and publish a short digital story that tells something important about you and your interests. Explore ways that creating or using digital stories can aid learning and personal growth. Cross-listed with INTE 4340. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5360 - Critical Digital Pedagogy (3 Credits)

Critical Digital Pedagogy is an overview of the intersections between digital technology and critical pedagogy. The course focuses on theory, practice, design and leadership in digital learning, open education, and collaboration with the larger community of educators concerned with critical digital pedagogy. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5370 - Open Education (3 Credits)

Open Education is an overview of the open education and open pedagogy movement, both the ideology and practices associated with working in the commons. As knowledge creators and learning designers, students will gain a greater understanding of the rights and responsibilities of open access, open design, open educational resources, and the issues. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5660 - Developing Self-Paced Online Modules (3 Credits)

Students use a variety of tools and strategies to develop self-paced eLearning courseware, such as tutorials. The course covers critical aspects of the instructional development process that support the creation of effective self-paced online learning experiences, materials and resources. Cross-listed with INTE 4660. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5665 - Learning with Social Media and Networking (3 Credits)

The focus of this course is on how educators leverage networked social tools, technologies, and environments to address educational needs, opportunities, and problems of practice; and establish and nurture their own professional learning through participation in digital cultures. Cross-listed with INTE 4665. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall, Spring.

INTE 5670 - Crafting Synchronous Learning (3 Credits)

Webinars and other live online events are an increasingly popular approach to the delivery of learning and professional development opportunities. Informed by theory and research, students plan for and facilitate live learning events delivered via synchronous online technologies. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5680 - Producing Media for Learning (3 Credits)

Students develop and integrate media resources into eLearning environments, applying principles of media selection and multimedia learning. Students explore a variety of tools for producing audio, video, and multimedia content and examine ways to enhance eLearning courses through multimedia presentation and engagement resources. Cross-listed with INTE 4680. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5711 - Creative Designs for Instructional Materials (3 Credits)

This course is a project-based exploration of design theories, principles, and best practices for communicating information to diverse learning audiences. Students apply unique design approaches and formats to the creation of materials for teaching, learning, and being of service to underrepresented communities. Cross-listed with INTE 4711. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 5830 - Workshop: Learning Technologies (0.5-4 Credits)

Specific titles vary depending upon the specific skill areas within learning technologies. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

INTE 5840 - Independent Study: Learning Technologies (1-4 Credits)

Restriction: Restricted to graduate level students. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

INTE 6720 - Research in Learning Design and Technology (3 Credits)

Analysis, evaluation, and production of research in instructional technology. Methods for observing instruction, assessing learning, and collecting participants reports to improve instruction. Development of recommendations for action based on research findings. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 6730 - Digital Pedagogy Lab (2-3 Credits)

Digital Pedagogy Lab is an international professional development gathering for educators committed to issues of diversity, equity, inclusion, critical digital pedagogy and imagining a new future for education. The Lab is a space for teachers, students, librarians, administrators, and technologists interested in inquiry, praxis, and social justice. Max hours: 6 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 6.

INTE 6750 - Trends and Issues in Learning Design and Technology (3 Credits)

This course examines definitions, history, core concepts, and current trends and issues related to the practice of instructional technology. Topics include instructional systems design, theories of learning and instruction, change management, performance improvement, emerging technologies, equity and access, and mobile learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 6840 - Independent Study: Learning Technologies (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

INTE 6930 - Internship: Learning Technologies (3 Credits)

Placement in a business, school or field setting where professional skills are applied to assess needs, design, develop and evaluate an instructional system, and provide leadership for change. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 12.

INTE 6999 - Leadership for Technology Innovation (3 Credits)

This course examines principles and strategies for leadership in a school, library, district, or organization aiming to improve its use of educational technology. Course learning essentials include how to: deal with competing voices; promote organizational change; assess and analyze technology use; pursue continuous improvement; employ strategic planning practices; implement effective programs; ensure sound professional development; wrestle with pressing leadership challenges; and secure funding (grant writing). Max hours: 3 Credits. Grading Basis: Letter Grade

INTE 7100 - Professional Learning and Technology (3 Credits)

Examines research surrounding the design and delivery of professional development (PD) programs in K20 and workplace settings. Projects and activities address: adult learning; PD models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7110 - Mentoring, Coaching and Training (3 Credits)

In this course students examine research surrounding the design and delivery of professional learning (PL) programs in K20 and workplace settings. Projects and activities address: adult learning; PL models; design and; performance support and evaluation; career development and digital presence; and online tools. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7130 - Professional Learning: Perspectives and Practices (3 Credits)

In this course students develop and evaluate large-scale learning initiatives in K20 and workplace settings. Topics include: frameworks for evaluating job performance based on professional learning standards; planning, delivering, and evaluating professional learning initiatives; research models; and performance improvement tools and resources. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7150 - Engaging in Education Advocacy (3 Credits)

This course will look at the theoretical foundations and critical issues of advocacy, elements of advocacy planning, and strategies for action. You will deepen your understanding of advocacy tools, processes and models in an effort to help you imagine how to utilize advocacy in your own practice. A primary focus will be on the connection of community organizations and schools. Cross-listed with INTE 5150. Max hours: 3 Credits.

Grading Basis: Letter Grade

INTE 7930 - Internship: Professional Learning (3 Credits)

Working under the direction of field and academic supervisors in field settings, contribute to projects intended to help educators and other workers improve their job performance. Apply your knowledge to complex problems of practice, thus preparing for ongoing leadership opportunities. Max hours: 3 Credits.

Grading Basis: Letter Grade

Interdisciplinary Arts (ARTS)

ARTS 5000 - Topics (3 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ARTS 5150 - Topics In Cross-Disciplinary Arts (1-3 Credits)

Investigates the historical and critical perspectives of the arts in a variety of contexts. Specific topics provide a focus for students to discover the ways in which the arts inform each other and are shaped by the events of the world. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

ARTS 5700 - CMTC Topics in Transdisciplinary Practice (1-6 Credits)

Specialized topics are investigated via future- and professionally-focused curricula that utilize transdisciplinary collaboration, creativity and innovative approaches to real-world problems. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Interdisciplinary Major Course (ISMA)

ISMA 5000 - Special Topics (1-3 Credits)

Special classes for faculty-directed experiences examining issues and problems not generally covered in the curriculum. Restriction: Restricted to graduate and non-degree graduate students. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Interdisciplinary Studies (IDST)

IDST 5000 - Special Topics (1-3 Credits)

Cross-listed with IDST 4000. Note: May be taken more than once for credit when topics vary. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

IDST 5010 - Foundations of STEM Communication (3 Credits)

This course will provide students with an introduction to STEM communication and offer opportunities for developing STEM content for a variety of audiences across multiple formats. These formats span written, oral, digital, and social media communication. Through classroom exercises and assignments, students will understand the role of communication in shaping perceptions, knowledge, decisions and ultimately realities vis-a-vis STEM. They will also learn to provide critical analysis of popular mainstream STEM communication and be able to identify basic expectations and constraints of STEM communication across audience and context. The class will explore approaches to communicating concepts in STEM disciplines to a variety of audiences through practice. Ultimately, the students will develop the skills and resources necessary to enable effective communication of complex STEM ideas to a wide range of audiences. Note: Students may not earn credit if they have already received credit for IDST topics courses with a similar title. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with IDST 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

International Business (INTB)

INTB 5800 - Special Topics in International Business (3 Credits)

Current topics in international business are occasionally offered. Consult 'Schedule Planner' for specific course offerings or contact an advisor for information. Prereq: Topics vary depending on the topic and the instructor requirements. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

INTB 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and a 3.5 grade-point average. Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

INTB 6000 - Introduction to International Business (3 Credits)

This course examines the international business environment, its impact on business operations across borders, and the international dimensions of key business and managerial functions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6020 - Cross-Cultural Management (3 Credits)

Focuses on the management of diverse socio-cultural and political norms and values in the global marketplace. The goal of this course is to develop skills in managing impacts of such values and norms on the effectiveness of international business operations and managerial activities. Prereq: INTB 6000 or permission of instructor. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6022 - International Business Negotiations (3 Credits)

Examines the international dimensions of business negotiations. It addresses the impact of the cultural, legal, political environments in the negotiation process, and examines similarities and differences in negotiation styles and approaches across borders. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6024 - International Trade Finance and Management (3 Credits)

Provides an overview of international trade finance and trade management. It examines the roles played by various parties involved in international trade, addresses key methods of international payment and related financing, and provides practical experiences on how to manage the import and export trade management process. (This course qualifies as an international elective for the MS in International Business program.)

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6026 - Marketing Challenges at the Global Frontier (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with MKTG 6020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

Typically Offered: Fall, Spring.

INTB 6028 - Global Study Topics (3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with ENTP 4028, ENTP 6028, and INTB 4028. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6030 - 11-Month MBA International Business Study Abroad (3 Credits)

The 11-Month MBA International Business Study Abroad is an experiential learning course conducted abroad. Available for 11-Month MBA students only.

Grading Basis: Letter Grade

Restrictions: Restricted to AMBA majors within the Business School.

INTB 6040 - Managing Global Talent (3 Credits)

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6520 or BUSN 6521 or MGMT 6380 with a grade of C (2.0) or higher. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with MGMT 6040. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6520 or BUSN 6521 or MGMT 6380 with a grade of C (2.0) or higher Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School

INTB 6060 - The Legal Aspects of International Business (3 Credits)

Analyzes the legal aspects of international business transactions and considers risk-reducing mechanisms such as letters of credit and arbitration. The course examines NAFTA, the European union, and other international trading structures and rules, giving the background for export or import activities. (This course qualifies as an international elective for the MS in International Business program.) Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6082 - Marketing in Emerging Markets (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect the marketing plan. (This course qualifies as an international elective for the MS in International Business program.) Prereq: BUSN 6560. Note: Students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with MKTG 6080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6094 - Marketing Issues in the Chinese Environment (3 Credits)

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with MKTG 6094. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6200 - International Business Policy (3 Credits)

The objective of this course is to develop competence relevant to strategy formulation and implementation in a multi-national enterprise, and in an international context. Provides theoretical knowledge, skills, and sensitivities that help deal effectively with the strategic and managerial problems of managing in a global environment. Prereq: INTB 6000 or ENTP 6826. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: INTB 6000 or ENTP 6826. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6270 - Intercultural Communications (3 Credits)

This course examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. This course may count towards the MS in International Business program and Global Cross-Cultural Studies specialization. Restriction: Restricted to NDGR majors with a sub-plan of NBA within the Business School. Cross-listed with COMM 4270 and COMM 5270. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6370 - International Accounting (3 Credits)

Designed to expose students to the international aspects of accounting and financial management. Includes discussion of some of the different financial accounting practices across countries; financial statement analysis in a global context. IFRS's are reviewed and compared with the requirements of US GAAP. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370. Prereq: BUSN 6550 or ACCT 6031. Cross-listed with ACCT 6370 and ACCT 4370. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: ACCT 6031 or BUSN 6550. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

Typically Offered: Spring.

INTB 6372 - International Financial Management (3 Credits)

Addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect financial functions. It reviews foreign and international institutions and the foreign exchange process and considers financial requirements, problems, sources, and policies of firms doing business internationally. Meets concurrently with FNCE 6370. Prereq: BUSN 6640. Cross-listed with FNCE 6370. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6411 - International Corporate Governance (3 Credits)

Discusses the structure and goals of the modern corporation, the primary governance mechanisms used to help companies achieve these goals, and how and why these roles, goals, and mechanisms vary across nations. The topics covered in the course include managerial compensation, board of director structure and ethics, shareholder activism, and how governance structures differ across countries. (This course qualifies as an international elective for the MS in International Business program). Prereq: BUSN 6640 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411. Cross-listed with FNCE 6411 and FNCE 4411. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 with a C or higher Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6460 - Emerging Market Finance (3 Credits)

This course aims to explore key emerging market finance issues from the perspectives of corporations, investors and markets. Emerging economies are deemed to be the engine of growth opportunities in the world economy. However, compared with developed markets, they typically have some unique features in their economic systems and financial markets, and thus different risk and return characteristics, leading to special considerations of capital budgeting, financing and investing in these economies. This course is to help develop a better understanding of financial markets, corporate finance and investments in emerging economies, with case studies on some major emerging markets (e.g., China, India). Prereq: BUSN 6640. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with FNCE 6460. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

INTB 6500 - International Business Consulting (3 Credits)

This action-learning course provides students the opportunity to work with and consult for a company at the senior executive level (e.g., CEO, Business Unit heads) in order to add value to the firm's international business. Students will apply international business principles and practices to address a strategic, functional, operational, or geographic opportunity facing a sponsoring organization. In addition, students will gain "on the job learning" of key protocols in an international business consulting context. Note: Because the topics change each term, student may take this course twice. Work with an advisor to make sure there is room in your degree plan before enrolling in the second course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

INTB 6600 - Blockchain and Emerging Technologies Impact Globalization (3 Credits)

Examines Blockchain and digital technologies powering globalization—how they are driving instant access to information, boosting transaction speed, and broadening the scope and reach of business across borders. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

INTB 6730 - Supply Chain Analytics (3 Credits)

Introduces the design, analysis, management, and control of supply chains. Because of continuing advances in globalization, sustainability, and information technology, course emphasis will include integration of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Cross-listed with BANA 6730. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6750 - Research Methods in International Business (3 Credits)

Focuses on three major issues: (1) research design from an international management perspective (e.g., qualitative, quantitative and ethnographic); (2) topical issues (e.g., culture, international negotiations, mergers and alliances); (3) trends in international business research (e.g., cross-national project teams, emerging theoretical perspectives). This course qualifies as an international elective for the MS in International Business program. Note: Available to students as Independent Study only. Prereq: INTB 6000 and BUSN 6530 or equivalent. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6800 - Special Topics in International Business (3 Credits)

Current topics in international business are occasionally offered. This includes international field study courses. Consult the 'Schedule Planner' for specific course offerings or contact an advisor for information. (This course qualifies as an international elective for the MS in International Business program.) Prereq: Topics vary depending on topic and instructor requirements. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6840 - Independent Study (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. (This course qualifies as an international elective for the MS in International Business program.) Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6870 - Global Climate Change (3 Credits)

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

INTB 6950 - Master's Thesis (1-8 Credits)

Prereq: INTB 6750. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Additional Information: Report as Full Time.

International Studies (INTS)

INTS 5152 - Religion & Communication (3 Credits)

This course focuses on the relational/coconstitutive dynamics between religion, culture, and communication and how that shapes the world in which people live; how the legacy of political religious conflict, in conjunction with international culture wars, instigate socio-cultural conflict and change; and how an in-depth study of the dynamics of religion, culture, and communication can improve intergroup/intercultural/international relations or even negotiation/conflict resolution processes. Students will develop capacity to critically analyze the socio-cultural and political implication of religious ideology (radical and moderate), ways in which these ideologies are performed and communicated, and their (students') agency/ability to contribute to intercultural/international understanding, conflict resolution, civic engagement, and/or social justice efforts. In addition, upon completion, students should be prepared to engage in complex conversations about the idea of religion, its role and relevance in human lives, and recognize several commonalities and differences between their (students') and non-Western/other societies' worldviews, cultures, and communicative dynamics. We will engage these topics through multiple and diverse readings, examples from television, film, and social media, reflexive writing assignments, research and analytical activities, critical discussions, and experiential learning activities. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with COMM 4152, INTS 4152, RLST 4152, COMM 5152, and RLST 5152. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

INTS 5995 - Global Study Topics (1-15 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Cross-listed with INTS 4995. Term offered: summer. Repeatable. Max Hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

inWorks Innovation Initiative (IWKS)

IWKS 5100 - Human-Centered Design, Innovation and Prototyping (3 Credits)

Offers a graduate-level introduction to collaborative interdisciplinary design and innovation from a human perspective, as well as introducing key theoretical and computational foundations of innovation. Using the wide array of Inworks prototyping facilities, teams of students will design and implement human-oriented projects of increasing scale and complexity, in the process acquiring essential innovation and problem-solving skills. Prerequisite: None. No previous design or prototyping experience is expected or required. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5120 - IoT: The Internet of Things (3 Credits)

In a world where everything is connected to everything else, how does that work? This course introduces techniques for (1) designing systems that can sense the environment and respond to humans in meaningful ways and (2) creating networks of physical objects that collect and exchange data. Such systems might include wearable sensors, interactive art, and Internet-connected home devices. Working individually and in teams, students will develop projects using Inworks' materials, devices, and fabrication tools. The course involves considerable prototyping and software development but requires only introductory programming and prototyping experience. Suggested Background: IWKS 5100 & some computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5150 - Advanced Human-Centered Design and Prototyping (3 Credits)

Graduate version of IWKS 4100. An advanced exploration of design thinking and the user-centered design paradigm from a broad range of perspectives, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Using a team-based, project-oriented approach, students will develop advanced expertise in the design, development, and critique of solutions to important human problems. The course will make full use of Inworks' prototyping facilities. Suggested Background: IWKS 5100 & 5170. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5170 - 3D Design, Computation and Prototyping (3 Credits)

Introduces the design and computer-controlled fabrication of three-dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router/mill) processes. Increasingly complex projects throughout the semester using various CAD/CAM software tools will explore design strategies for digital fabrication. Restriction: Restricted to students with graduate standing. Cross-listed with IWKS 3100 and ARCH 3706. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5180 - Inworks: Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping (1-3 Credits)

Provides weekly speakers, workshops and other experiences that educate and enrich across the design, innovation and prototyping landscape. Students may choose to participate in any five (for one credit), ten (for two credits) or fifteen (for three credits) activities. Each week, participating students will attend the scheduled activity, and then create a meaningful response that reflects the impact of that activity on their thinking or practice. Prerequisites: None. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

IWKS 5200 - Data Science for Innovators (3 Credits)

Graduate version of IWKS 3200. Introduces techniques for capturing, processing, visualizing, and making meaning out of large datasets. With the exponential growth and decreasing cost of data collection tools such as genome sequencing, social media, crowd sourced data, mobile phone apps, remote sensors, and data from other publically available sources, innovators are able to harness a rich array of data in their designs. This course will introduce the fundamentals of working with online data and large data sets, introduce widely used data analysis and visualization tools, and culminate in a cumulative project that incorporates data in a significant way. Suggested Background: IWKS 5350 or similar computing experience. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5300 - NAND to Tetris: Foundations of Computer Systems (3 Credits)

Graduate version of IWKS 3300. Introduces the principles of computer systems that underlie the global information age. Starting from first principles, students gradually construct a simple hardware platform and a modern software hierarchy, yielding a working basic yet powerful computer system. Suggested Background: IWKS 2300 or similar computing experience. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5350 - Computational Foundations of Innovation (3 Credits)

Graduate version of IWKS 2300. Introduces the technological underpinnings of modern society, introducing the fundamental principles of computing. Students create realistic artifacts, and imbue those artifacts with interesting behavior by writing computer programs in on-line virtual world similar to Second Life and for simple Arduino-connected devices. In-class and in-world discussions and readings introduce important computing ideas and concepts. Completion of this course will prepare students for more advanced IWKS graduate courses that require knowledge of computing principles and practices. Prerequisites: None. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5400 - Game Design and Development I (3 Credits)

Graduate version of IWKS 3400. Introduces principles of computer game development, building on the rich interplay of computer science, graphics design, physics, music, and narrative. Students develop interactive 2D and 3D games and a final project. Substantial software development involved, but requires only introductory programming experience. Suggested Background: IWKS 2300 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5450 - Game Design and Development II (3 Credits)

Graduate version of IWKS 4450. Continuation of IWKS 5400, with increased emphasis on more advanced techniques including 3D rendering; multimodal music, complex narrative, animation, non-player AI, and advanced 3D techniques including diffuse, ambient, specular, and emissive lighting; vertex, pixel and geometry shaders; shadows; terrain building; reflective and refractive lighting; bump, parallax, and parallax occlusion mapping; Phong and Gouraud shading; "cel" shading; ray tracing; bloom; and high dynamic range lighting. Suggested Background: IWKS 5400 or similar experience in game development. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5500 - Bio-Design and Innovation (3 Credits)

Introduces the biodesign innovation process, which involves identifying important human needs and inventing meaningful solutions to address them. The course examines how biotechnology and bio-inspired innovation improve the form and function of our design world through innovative materials and novel approaches to developing buildings, food, medicine, infrastructure and more. Readings and in-class debates will raise critical issues in contemporary bioethics. For their final projects, students will choose to create and prototype a speculative biodesign concept, or work in the bio lab on the development of a real-world biodesign solution of their choosing. Suggested Background: IWKS 2100 & 3100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5520 - Design for Healthful Human Longevity (3 Credits)

Graduate version of IWKS 4520. Introduces contemporary studies, therapies, theories, and research on aging, age related disease, and innovations for longer healthier human lives. Guest lecturers, seminar discussions, readings and discussions will inform student projects that address challenges to prolonged, healthy, disease-free lives. Suggested Background: IWKS 5100 and 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5540 - Synthetic Biology for Innovators (3 Credits)

Graduate version of IWKS 3540. Introduces the fundamentals of synthetic biology for those who seek to use it as tool for innovation. Synthetic biology allows us to engineer new biological systems and redesign existing biological components by integrating aspects of biotechnology, evolutionary and molecular biology, systems biology, computer engineering, computational biology, and genetic engineering. Advancement in technological tools and techniques make this material accessible to motivated individuals from many disciplines, and no biology background is required. Culminates with a final team project focused on designing synthetic biology solutions that address human need. Suggested Background: None. No previous background in biology is required. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5550 - Innovation Law and Policy (3 Credits)

Graduate version of IWKS 3550. Introduces legal and regulatory foundations related to innovation, including intellectual property, telecommunications, electronic commerce, the Internet, biotechnology, ethical and equity considerations, and financing. These issues are examined from the perspectives of the legal, business, capital, development, consumer, and policy-making communities. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5600 - Innovating for the Developing World (3 Credits)

Graduate version of IWKS 3600. Explores the design and development of products and services that can be sustainably and gainfully used by the world's poorest citizens. Students in interdisciplinary teams will design, implement and evaluate viable solutions to real problems faced by people in the developing world. The goal is to develop an understanding of the extraordinary challenges faced by individuals for whom basic survival is not a given, and the knowledge and skills necessary to create designs that respond appropriately to those unique circumstances. Provides a foundation for further study and practice in the area of technology and development. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5620 - Mobile App Development (3 Credits)

Graduate version of IWKS 3620. Introduces mobile application development, including front-end mobile application clients, data handling, connectivity to back-end services and cloud hosting. The course provides an overview and comparison of technical approaches employed by Apple iOS, Google Android, and cross-platform development environments. Students will install, develop, test, and distribute mobile applications while addressing challenges associated with development for any mobile platform: limited screen size and memory, gesture based GUI, varying connectivity, and the wide variety of target mobile devices. Suggested Background: IWKS 5100 & IWKS 5350 or similar computing experience. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5650 - Innovating for the Developing World (3 Credits)

Explores the design of products and services that can be sustainably used by the world's poorest citizens. Students design, implement and evaluate solutions to real problems in the developing world. Provides a foundation for further study and practice. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5680 - Case Studies in Design (3 Credits)

Graduate version of IWKS 4680. Explores why some projects succeed and others fail. Many human-centered interventions fail to meet their designers' objectives, reflecting the unique challenges associated with matching human need with feasibility. Explores how innovators can increase their chances for success by examining several successful (and unsuccessful) designs. Suggested Background: IWKS 5100 & 5700. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5700 - Innovation and Society (3 Credits)

Graduate version of IWKS 3700 Analyzes impact of innovative design on work, sense of self, and social systems, in education, healthcare, finance, and other sectors. Investigates how people customize / "hack" technologies they use, and the moral / ethical implications of being designers. Students will research the impact of an innovation of their choice and share via essays, models, videos, or another medium of their choice. Suggested Background: IWKS 5100. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

IWKS 5750 - Critical Analysis of Design (3 Credits)

Graduate version of IWKS 3700. Examines technologies that pervade daily life. Analyzes impact of designs on work lives, sense of self, and social systems, within education, healthcare, finance, and other sectors. Investigates how technologies are customized and ethical implications of designing systems for others. Suggested Background: IWKS 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5800 - StartUp: Creating New Ventures (4 Credits)

Teams of students are guided to create and launch a new company in a single semester. Culminates in a "pitchfest" to area entrepreneurs and venture capitalists. One of two alternative capstone courses for the Inworks Minor in Design and Innovation. Restriction: Requires enrollment in the Inworks HCDI minor or certificate, or instructor permission. Suggested Background: Completion of at least three other Inworks courses. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Requires enrollment in the Inworks HCDI certificate.

IWKS 5850 - Product Design (3 Credits)

Graduate version of IWKS 3850. Explores the design requirements associated with creating a product that will be manufactured in large quantities and used by potentially thousands of users. These requirements are often very different from those associated with creating a working prototype. This gap between prototype creation and starting a business offers an interesting and unique set of design challenges. As part of the course, teams of students will engage in a realistic product design cycle. Max hours: 3 Credits.

Grading Basis: Letter Grade

IWKS 5900 - Graduate Capstone (4 Credits)

Graduate version of IWKS 4900. Working closely with project sponsors, students design, implement, and evaluate a project for use in local industry and non-profit organizations. One of two alternative capstone courses for the Inworks Graduate/Professional Certificate in Design and Innovation. Prereq: IWKS 5100 and enrollment in the Inworks graduate certificate. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: IWKS 5100 and enrollment in the Inworks graduate certificate.

IWKS 5930 - Special Topics in Human Centered Design and Innovation (1-4 Credits)

Emergent issues and professional developments in design, innovation and prototyping. Consult the current online Inworks Course List for semester offerings as new special topics courses are frequently added. With permission, may be repeated for credit. Restriction: Restricted to students with graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to students with graduate standing.

IWKS 5970 - Independent Study in Human Centered Design and Innovation (1-6 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design, innovation and prototyping. With permission, may be repeated for credit. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Landscape Architecture (LDAR)

LDAR 5500 - Introductory Landscape Architecture Design Studio (3 Credits)

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Prereq: LDAR 5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 5510.

LDAR 5501 - Landscape Architecture Design Studio 1 (3 Credits)

Introduction to basic strategies, methods and techniques of landscape architectural design and representational techniques. Explores fundamental issues of spatial form and landscape experience and meaning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5502 - Landscape Architecture Design Studio 2 (6 Credits)

Problem-based studio course covers strategies, methods and techniques of landscape architectural design with emphasis in more complex social and urban issues, design processes and development and the application of theory and research. Prereq: LDAR 5501 or permission of department chair. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5503 - Landscape Architecture Design Studio 3 (6 Credits)

Problem-based studio covering the approaches, techniques and means for planning and designing sites to accommodate development program on a particular site within an identifiable context. Covers issues definition, site analysis, programming, development of design strategies, evaluation site planning, and communication. Prereq: LDAR 5501 and LDAR 5502 or permission of department chair. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5510 - Graphic Media in Landscape Architecture (3 Credits)

Introduces basic principles and methods associated with analog and digital drawing-plan, sections, perspectives, color, shading, composition and projection. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5521 - History of Landscape Architecture (3 Credits)

Intro survey course fosters workable understanding of landscape architecture design history and theory and offers a base for understanding trends and ideas influencing contemporary practice. Emphasizes Western Europe and the United States from antiquity to early twentieth century. Cross-listed with LDAR 4421. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate level or senior level or higher students

LDAR 5530 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with URPL 6350, URBN 6525, and ARCH 6270. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 5532 - Landform Manipulation (3 Credits)

Focuses on the fundamental technical aspects of landscape architectural design and site engineering of related topography, grading, drainage design, landform manipulation, earthwork calculations, and road alignment. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5540 - Introduction to GIS (3 Credits)

An introduction to GIS as a set of strategies, methods and techniques used to facilitate the inventory and analysis of complex systems. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate Landscape Architecture majors within the College of Architecture and Planning

LDAR 5572 - Landscape Ecology (3 Credits)

Course emphasizes continuity and change in an ecology of the natural and man-made landscape. Focuses on biological, geophysical, cultural, and perceptual factors involved in landscape, spatial organization, and urban and regional structure. Introduces field ecology for landscape architecture. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 5573 - Advanced Landscape Ecology (3 Credits)

Critically investigates the performance of complex landscape systems on multiple spatial and temporal scales, with emphasis on the interaction of human and non-human systems. May address issues of sustainability, disaster recovery, mitigation, etc. Prereq: LDAR 5572 or URPL 6500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 5572 or URPL 6500 Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6470 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project. Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and URPL 6850. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6520 - Landscape Architecture in Other Cultures (1-9 Credits)

Study abroad. Various studies of landscape architecture, architecture, urbanism, and design to destinations outside of the continental United States. Cross-listed with LDAR 3690. Restriction: Restricted to majors within the College of Architecture and Planning. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6604 - Landscape Architecture Design Studio 4 (3 Credits)

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills.. Prereq: LDAR 5501, 5502, 5503 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6605 - Landscape Architecture Design Studio 5 (3 Credits)

Intermediate landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to expand their graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6606 - Landscape Architecture Design Studio 6 (6 Credits)

Advanced design studio covering landscape change in diverse contexts at various scales and complexities. Recommended: completion of 2 graduate level landscape studios or permission of department chair. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6607 - Landscape Architecture Design Studio 7 (3 Credits)

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6608 - Landscape Architecture Design Studio 8 (3 Credits)

Advanced landscape design studios engage design projects and topics that cover diverse design approaches, contexts, and landscape processes at various scales and complexities. Design projects will vary. Students are expected to demonstrate mastery of graphic, oral communication, and design skills. Prereq: LDAR 5501, 5502, 5503, 6604, 6605, 6606, 6607 or permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6620 - Landscape Architecture Theory and Criticism (3 Credits)
Explores and assesses theory in landscape architecture and the concepts, ideas and discourses underlying contemporary design approaches. Emphasizes developing critical understanding of the roles and agency of theoretical inquiries in landscape architecture in relation to aligned disciplines. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6625 - Landscape Architecture Field Studies (3 Credits)
Critical field evaluation of built works of landscape architecture using methodological approaches like field measurement, mapping, sketches, photography, written evaluations and applied research. It may also assess the performative aspects of designed landscapes. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6630 - Site, Society and Environment (3 Credits)
Sites are defined by relationships within environmental and social settings. Therefore site design should be primarily ethical and secondarily technical. This course examines the implications of this idea through site methodologies, conceptual construction of site, site analysis and site typologies. Cross-listed with LDAR 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6631 - Landscape Construction Materials and Methods (3 Credits)
Develops understanding of detailed design processes, construction materials and selection of construction methods and documents. Typically taken with LDAR 6605 and 6606 (LDAR Design Studios 5 and 6). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6632 - Site Planning (3 Credits)
Focuses on site planning processes, criteria and decision-making. Includes research, site analysis, and data synthesis as they relate to site context and design concepts. Also addresses site work (grading and drainage, utilities), cost computation, and creating site and building program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6635 - Community Engaged Design Practice (3 Credits)
Obtain real-world pre-design and conceptual design experience in complex urban environments focusing on evolving trends in sustainability. Using digital trans-disciplinary learning students will develop comprehensive sustainable strategies that draw from their own sustainable philosophy developed during this class. Cross-listed with ARCH 6257 and LDAR 4435. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6636 - Urban and Local Food Systems (3 Credits)
In this seminar, we will examine the connections between landscape architecture and food production in cities as well as the role that food production plays in rural landscapes. The course material may be historical, theoretical, or oriented toward contemporary research. Cross-listed with LDAR 4436. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6637 - Social Justice in Planning (3 Credits)
This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with URPL 6410 and ARCH 6258. Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Architecture graduate students within the College of Architecture and Planning

LDAR 6641 - Computer Applications in Landscape Architecture (3 Credits)
Introduces digital technologies and methods commonly used in landscape architecture including primarily CADD, visualization, graphic design, and other emerging applications. Includes hands-on exercises. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6642 - Landscape Architecture Digital Design Workshop (3 Credits)
Provides hands-on experiences in the principles, software, and theories for emergent 3-D and 4-D design in landscape architectural practice and research. Prereq: LDAR 6641. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LDAR 6641 Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6652 - Urban Design Seminar Topics (3 Credits)
Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with URBN 6652. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

LDAR 6655 - Urban Ecology (3 Credits)
This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with URPL 6547. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

LDAR 6670 - Plants in Design (3 Credits)

Explores the challenges, opportunities and responsibilities of designing with living, growing, and ever-changing organisms. Students learn to identify plants that are commonly used in the Colorado region and the principles, theories, methods, and techniques for planting design. Cross-listed with LDAR 4470. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6671 - Plant Material Identification (3 Credits)

Students learn the names, characteristics and site requirements of plants including trees, shrubs, ground covers and perennials commonly used in built works in the Colorado region. Methods are transferable to other regions. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6686 - Special Topics: Landscape Architecture (3 Credits)

Various topical concerns are offered in landscape architecture history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max hours: 21 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 21.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6706 - Advanced Landscape Architecture Design Studio Immersive I (4 Credits)

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel competent also required (LDAR 6707). Recommended: complete 2 previous landscape graduate studios or permission of department chair.

Coreq: LDAR 6707 and LDAR 6740 or LDAR 6745. Max hours: 4 Credits.

Grading Basis: Letter Grade

Coreq: LDAR 6707 and LDAR 6740 or LDAR 6745.

LDAR 6707 - Advanced Landscape Architecture Design Studio Immersive II (2 Credits)

Advanced design studio forms core of the Immersive experience; covers landscape change in diverse contexts at various scales and complexities. Travel anticipated. Recommended: complete 2 previous landscape graduate studios or permission of department chair. Co-req: LDAR 6706 and LDAR 6740 or LDAR 6745. Max hours: 2 Credits.

Grading Basis: Letter Grade

Co-req: LDAR 6706, and LDAR 6740 or LDAR 6745.

LDAR 6711 - Advanced Graphics Landscape Architectural (3 Credits)

Focuses on developing practical and applied expertise in various manual and digital visualization and representation techniques and media used for enhanced effectiveness in visual communication. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6712 - Green Roofs/Living Systems (3 Credits)

The primary objective for this seminar is to give students a general understanding of green roof systems, vegetated roofs above underground architecture and vertical vegetated systems. The seminar will engage in critiques and discussions using international, national and local case studies, covering history, typologies, function, design, master planning and costs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6720 - Finding Common Ground (3 Credits)

Focuses on principles and societal variables that influence the structure of urban neighborhood space through research application. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6722 - Contested Terrains (3 Credits)

Explores the different processes, factors and forces that determine and influence occupation, land use and built form through the phenomena of conflict and contestation. Design is inherently located within the disputes and discourses involving landscape as location and resource. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6723 - Cinema and the Landscape (3 Credits)

Explores the relationships between landscape and film through theoretical and practical investigations. Explores film's roles in understanding and investigating landscapes, their dynamic qualities and processes, and issues related to film's capacity to construct spatial meaning. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6724 - American Landscapes (3 Credits)

Historical, theoretical and critical evaluation of the development of American landscapes. May cover the economic, philosophical and social trends behind changes in the landscape as well as the intellectual and contextual changes to the theory and practice of landscape architecture. Prereq: LDAR 5521 Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6725 - Design Communications (3 Credits)

In this seminar students will learn research and writing skills to produce articles in clear, readable, and substantial prose, from academic criticism to general interest reviews; writing forms and styles, including essays, reports, award applications and writing for oral presentation; and editing basics. Prereq: History and/or theory of landscape architecture or architecture. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6735 - The Landscape of Food (3 Credits)

An examination of the reciprocal relationships between landscapes and patterns of food production, distribution, and consumption. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6740 - Advanced History/Theory Seminar - Immersive Semester (3 Credits)

Investigates topical issues in landscape architecture history/theory, process and methods within the framework of themes/issues running through the immersive semester course of study. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students.

LDAR 6741 - Urban Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Restrictions: Restricted to Graduate level students in the college of Architecture and Planning. Cross-Listed with URBN 6641, LDAR 6741, and URPL 6398. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate Level students in the College of Architecture and Planning.

LDAR 6745 - Advanced Media/Technology Seminar - Immersive Semester (3 Credits)

Advances landscape architectural practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of this seminar aligned with the immersive studio core track. Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-requisite LDAR6706 Advanced Landscape Architecture Design Studio - immersive. Restricted to graduate CAP students.

LDAR 6750 - Professional Practice (3 Credits)

Explores the essential elements of professional practice and equips students with the fundamental knowledge and skills requisite to understand and participate in this practice. Covers office organization, project management, contracts, professional ethics and non-traditional careers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6755 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with ARCH 6205 and URPL 6405. Restriction: Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6840 - Independent Study (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to landscape architecture or urban design. Prereq: Permission of instructor.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDAR 6850 - GIS Capstone (3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to GIS. Serves as Capstone for LA GIS certificate. Permission of instructor required. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDAR 6910 - Teaching Assistantship (3 Credits)

Work with a faculty member in a course to assist with course preparation and delivery and learn teaching practices. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LDAR 6930 - Landscape Architecture Internship (3 Credits)

This experiential learning course provides students the opportunity to participate in and reflect on the practice of landscape architecture by working in a design office. Students will reflect on and critically analyze issues such as leadership, management and collaboration. Prerequisite: This course may only be taken once during a student's academic career and is to be taken after the first year of graduate study. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

LDAR 6949 - Research Tools & Methods (3 Credits)

Introduces students to research in landscape architecture and related fields and disciplines. Provides students with research practices, methods, and methodologies and a critical framework to identify suitable approaches based on diverse projects and contexts. Supports studio, independent study and thesis. Cross-listed with ARCH 6473. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to majors within the College of Architecture and Planning

LDAR 6950 - Thesis Research (3 Credits)

Student works closely with a landscape architecture faculty advisor and thesis committee to develop the thesis through focused research. Research might entail both written and graphic inquiry leading to specific products with conclusive ideas setting the stage for final thesis. Prereq: LDAR 6949 and permission of department chair. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

LDAR 6951 - Landscape Architecture Thesis (6 Credits)

The Landscape Architecture thesis is expected to advance the field of landscape architecture by offering new insights into aspects of design, technology, history or professional principles. In this course, the student continues to work independently, but closely with a landscape architecture faculty advisor and thesis committee to complete the thesis. The thesis might take on different final forms (written volume, drawings, maps, digital images), depending on the subject inquiry. For further information on the Landscape Architecture Thesis Track consult the Landscape Architecture Thesis Guidelines. Prereq: LDAR 6949 and 6950. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Latin (LATN)

LATN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Learning, Developmental and Family Sciences (LDFS)

LDFS 5110 - Human Learning (3 Credits)

A review of the research on human learning, including related topics such as information processing and motivation. Various theories of learning are examined in-depth, and their applications to teaching and practices in schools (and in other educational settings) are considered. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5240 - Cognition and Instruction (3 Credits)

Explores recent developments in cognition and their implications for instructional practices. Includes theory and research in cognitive psychology and resultant educational practices. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5260 - Child Study and Observation (3 Credits)

Involves extensive, systematic observation of young children. Recorded observations are analyzed in terms of child development theories, children's background, setting variables, and are then presented in written and elaborated form. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 5840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

LDFS 5930 - Learning, Developmental and Family Sciences Internship (2-4 Credits)

Field-based experiences in settings (schools, businesses, governmental agencies, special projects) that are linked closely to the student's professional objectives. Requires a minimum of 150, 225 or 300 clock hours under supervision (two-four credit hours, respectively). Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

LDFS 6100 - Advanced Child Growth and Development (3 Credits)

Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education. Cross-listed with LDFS 7100. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 6140 - Social Contexts of Adolescence and Schooling (3 Credits)

Systematic study of the major theories of adolescent growth in social contexts, emphasizing the social and cultural construction of the adolescent experience. Focuses on current research regarding adolescents and the implications of the research for education. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 6200 - Human Development Over the Life Span (3 Credits)

An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 7200. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 6220 - Adult Development (3 Credits)

Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross listed with LDFS 7220. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 6320 - Mind, Brain, and Education (3 Credits)

An introductory survey into contemporary theory and research in developmental cognitive neurosciences and their potential applications to education, aiming to explore how the brain learns, and what it means for learning and development. Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6400 - Observation, Documentation and Assessment (3 Credits)

This course focuses on developing competencies in observation, documentation, and assessment to inform understandings about children and teaching. Students will draw from child development and ecological theories to observe children's assets, then interpret and analyze how children learn and develop. Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6410 - Social Foundations of Family and Community (3 Credits)

In this course, students of early childhood education will learn to think and act reflectively, critically, and socially, informed by the roles of families and communities of young learners. Course readings, observation, documentation, and reflection provide foundations for the development of relational perspectives on social justice. Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6420 - The Environment as the Third Teacher (3 Credits)

This course will provide students with an understanding of the relationship between the Learning Sciences and Reggio-Inspired practices, and how this relationship can be applied to the design of engaging and dynamic learning environments. Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6600 - Motivation in Contexts (3 Credits)

Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale. Applications are considered for both educators and learners in various social and cultural learning contexts. Cross listed with LDFS 7600. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 6750 - Designing Environment for Learning and Development (3 Credits)

Introduction to concepts, findings, and research methods relevant to theory and research in the Learning Sciences, with specific focus on how those concepts and findings apply to design learning across settings.

Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

LDFS 6910 - Practicum Reflections on Learning (3 Credits)

This course focuses on the pursuit of praxis within the student teacher residency. Reflection on course resources, engagement in ongoing processes of documentation, and reflection within a small group meeting format drive social construction of knowledge about learning and development. Max Hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 6950 - Culminating Capstone Experience (1-3 Credits)

This course provides a learning environment for students to complete an applied project/thesis in education and human development contexts as part of their final capstone experience in the Master's in Learning, Developmental and Family Sciences. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 3.

Additional Information: Report as Full Time.

LDFS 7100 - Advanced Child Growth and Development (3 Credits)

Systematic study of the major theories of child growth and development. Focuses on current research regarding infants and children and the implication of such research for education. Cross listed with LDFS 6100. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 7120 - Family Dynamics (3 Credits)

Review and analysis of issues related to families with exceptional or at-risk young children. Topics include coping skills, family involvement, parent-child interaction, and sources of support. Special attention is given to current research and its application to early intervention. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

LDFS 7140 - Advanced Studies in Youth Development (3 Credits)

Systematic study of the current research and major theories of youth growth, emphasizing the social and cultural construction of the youth experience. Focuses on current theories and research regarding youth within contemporary social structures in multidisciplinary perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 7200 - Human Development Over the Life Span (3 Credits)

An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personhood and the courses and themes of life. Cross-listed with LDFS 6200. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 7220 - Adult Development (3 Credits)

Surveys theories and principles of adult development through an ecological perspective with an emphasis on community and educational contexts. Cross-listed with LDFS 6220. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 7600 - Motivation in Contexts (3 Credits)

Theories of human motivation are examined through social and cultural lens directed at phenomena of engagement and disengagement in activities at different levels of scale. Applications are considered for both educators and learners in various social and cultural learning contexts.

Cross-listed with LDFS 6600. Max hours: 3 Credits.

Grading Basis: Letter Grade

LDFS 7712 - Learning and Human Development (3 Credits)

Students apply major theories from learning and human development theories to problems of practice and research related to education and community contexts. Restriction: Restricted to EDHD-PhD, LDRE-EDd, and SPSY-PsyD majors within the School of Education and Human Development. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHD-PhD, LDRE-EDd, and SPSY-PsyD majors within the School of Education and Human Development.

LDFS 7840 - Learning, Developmental and Family Sciences Independent Study (1-6 Credits)

Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Literacy, Lang, & Culturally Responsive Teaching (LCRT)

LCRT 5000 - Elementary Literacy Instruction and Assessment Part 1 (3 Credits)

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6 classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6 Students. Cross-listed with LCRT 4000. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

LCRT 5001 - Elementary Literacy Instruction and Assessment Part 2 (3 Credits)

This course develops an appreciation, understanding, and application of literacy assessment and instruction in PK-6th classrooms. Interns learn how to use various types of assessment and instruction for reading and writing that address the literacy needs of PK-6th Students. Cross-listed with LCRT 4001. Prereq: LCRT 4000 or LCRT 5000. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: LCRT 5000 or LCRT 4000. Restriction: TCHR-MA plan or BMA subplan.

LCRT 5020 - Reading Development, Instruction and Assessment (3 Credits)

This course involves critical examination of reading process and instruction. Teachers develop an understanding of the principles of sociopsycholinguistic theory in learning and teaching. Organization options for reading instruction for native and non-native speakers of English at all ages and ability levels will be examined. Teachers become familiar with materials and methods used for reading and reading instruction in schools, including multicultural materials, students' interaction with and response to materials; and techniques to assess and evaluate students reading. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5028 - Developing Strategic Readers, Grades 4-12 (3 Credits)

Focuses on supporting adolescents' developing literacy understandings especially related to vocabulary, reading comprehension, writing, and student engagement across all content areas in the upper elementary grades through high school. Importance is placed on putting new teaching practices in place. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5029 - Developing 21st Century Literacy Curriculum, Gr 4-12 (3 Credits)

Focuses on adolescents' developing literacy understandings across all content areas upper elementary grades through high school. Attention is given to comprehension and critical thinking including assessment, unit planning, problem-based learning, research cycles, technology, and putting new teaching practices into place. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5055 - Literacy Assessment & Informed Instruction (3 Credits)

Focuses on reading, writing, and language assessments and their use to plan and deliver informed classroom and intervention instruction. Principles of literacy assessment, state and federal law, instructional strategies and interventions are learned through creation of student literacy profiles. Needs of both L1 and L2 learners as well as other diverse learners are considered. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5100 - Secondary Literacy Instruction and Assessment (3 Credits)

Provides knowledge and practice in using specific literacy methods to enhance students' content learning and literacy development in middle schools and high schools. Various methods of literacy assessment to guide instruction for students are emphasized. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Cross-listed with LCRT 4100. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

LCRT 5150 - Culturally Relevant & Responsive Pedagogies (3 Credits)

Provides an examination of broad cultural diversity regarding the role of culture in teaching and learning in the classroom. After examining their educational contexts, students gain skills to differentiate instruction for diverse learners; foster quality instruction that demonstrates respect for cultural pluralism; and, create equitable educational environments. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5200 - Theory and Methods of English Education (3 Credits)

Focuses on teaching and learning theories and practical classroom strategies for teaching English Language Arts to students in middle school and high school. Cross-listed with LCRT 4200. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5201 - Adolescent Literature (3 Credits)

Reading and evaluating fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature. Cross-listed with LCRT 4201. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5210 - Literacy Development Pre K-3rd Grade (3 Credits)

Focuses on children's developing literacy understandings and proficiencies beginning in the preschool years. Attention is given to language development, assessment, and instruction in pre-kindergarten through third grade, partnerships with community literacy institutions provide information on their use for literacy development. Cross-listed with LCRT 4210. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5220 - Literacy Routines and Assessment, Pre K-3rd Grade (3 Credits)

This course will focus on the routines and practices which allow for student specific instruction and assessment in the Early Literacy classroom. Participants will examine and critique current literacy routines and assessments needed to best meet the needs of culturally and linguistically diverse children. Cross-listed with LCRT 4220. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5230 - Early Literacy Instruction (3 Credits)

Participants will examine Pre K-3rd grade literacy instruction to understand how to meet the needs of young students. The course will analyze instructional practices for young gifted, special needs and English language learning students to best meet the needs of all learners. Cross-listed with LCRT 4230. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5310 - Literacy Assessment & Processing: Guided Reading (3 Credits)

The course will explore the format and components of Guided Reading Plus, including: responsive teaching, summative and formative assessment, content/language objectives, oral language development, strategies for problem solving, comprehension, fluency, word solving strategies, and the reciprocity of reading and writing. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5320 - Teaching Students with Reading Difficulties (3 Credits)

The course will explore specific teaching moves that help children build an effective literacy processing system and become independent readers. We will study areas of reading difficulty and ways of assessing students to determine their strengths and instructional needs. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5330 - Deepening Literacy Understandings (3 Credits)

This will explore the power of formative assessment for observation and interpretation of reading behaviors. We will study the continuum of literacy learning as a foundation for learning the behaviors and understandings that must be taught at each text level. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5710 - Primary Literacy for Diverse Learners, Pre K-Grade 3 (3 Credits)

This course provides teachers with a basic understanding of reading and writing development in preschool and early primary grades, while considering specific strategies for using and teaching reading and writing in early primary grades (pre-K-3). This course is cross-listed with LCRT 4710. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5720 - Writing Development, Instruction and Assessment (3 Credits)

This course combines examination of current research into effective practices of teaching writing with students' own writing projects. The curriculum serves teachers in all subjects and grades K-12. Readings, groupings, and discussions are differentiated according to specific grade(s) taught. Cross-listed with LCRT 4720. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5724 - Colorado Writing Project I (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5726 - Colorado Writing Project II (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5728 - Colorado Writing Project III (4 Credits)

Teachers will experience participating in writers' workshop, writing several pieces, taking them through revision and workshop groups. Teachers will also read, discuss, and respond to texts about teaching writing and preparing students to take state writing tests. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

LCRT 5730 - Language and Literacy Across the Curriculum (3 Credits)

Explores the value and use of reading and writing as tools for learning across the curriculum on a K-12 basis. Specific needs and strategies for assisting at-risk and second language learners are also discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5750 - Children's Literature in Spanish (3 Credits)

Taught in Spanish, this course presents children's literature from Spanish speaking countries and Spanish speaking authors, along with teaching methodologies and avenues of further research in the field. Prereq: senior-level proficiency in Spanish. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5770 - Effective Literacy Instruction for Diverse Learners (3 Credits)

Focuses on exploring, applying, and evaluating research-based instructional models and learning strategies for teaching literacy to diverse learners. Students develop a professional practice of providing instruction to support oral language, academic reading, and academic writing for native speakers of English, multilingual and bidialectal learners of English. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5780 - Connecting Cultures Through Literature (3 Credits)

This course looks at the issue of multicultural literacy for K-8th grade and how children's and young adult literature can be used to create a high quality multicultural curriculum which enhances literacy development and covers all the content areas. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5790 - Children's Literature: Grimm through Graphic Novels (3 Credits)

Children's literature course exploring the historical development of children's literature and its influence on contemporary literature and media. Emphasized are various genre including both fiction and nonfiction, choosing and critiquing children's literature, and children's book awards. Graphic novels and e-books are explored as the leading edge of this area. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5795 - Current Children's Literature (3 Credits)

This course explores children's literature, including electronic books, within the past decade. A wide range of genres will be explored with a particular emphasis on newer authors and illustrators in the field. Participants will also practice critiquing children's literature and selecting books for instruction. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5810 - Oral & Written Language & Literacy (3 Credits)

Focuses on oral/written language and literacy in educational and home settings. Addresses learners with native English, English as additional language, bi-dialectal, and multilingual. Students analyze language and literacy samples using language structures and discourse patterns to develop instructional techniques. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5815 - Family Literacies in Diverse Communities (3 Credits)

Focuses on involving and connecting with families and communities of classroom learners. Students gain practical strategies to identify resources and funds of knowledge that diverse learners and families bring to schools; and, use learners' cultural resources and references to promote all aspects of learning in the classroom. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 5831 - Reading Recovery: Observation Survey (2 Credits)

A workshop class which introduces the participants to an understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Prereq: reading and language arts methods. A minimum of three years primary teaching or reading teaching experience. Max hours: 2 Credits.

Grading Basis: Letter Grade

LCRT 5835 - Special Topics: Literacy and Language (0.5-3 Credits)

Specific topics vary but will include the exploration of literacy development and instruction in particular populations or with specific focuses. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 5840 - Independent Study: LCRT (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 5911 - Reading Recovery Practicum: Early Intervention (Theory, Procedures and Practice) (3 Credits)

A field experience which extends the participants' understanding of literacy acquisition and prepares them to implement the Reading Recovery Program within their school or district. Max hours: 3 Credits. Grading Basis: Letter Grade

LCRT 6840 - Independent Study: LCRT (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

LCRT 6910 - Seminar & Practicum in Literacy and Language (3 Credits)

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experiences, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and to reflect upon their roles as change agents in the field. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6911 - Seminar and Practicum in Literacy and Language, 7-12+ (3 Credits)

Provides opportunities for advanced students in the M.A. program to apply concepts acquired in course work and other educational experiences to specific situations. Students will work in schools, classrooms, administrative offices, or community centers (according to their experience, interests and current teaching positions; sites to be identified before course begins) to study the potential for change in schools and society and reflect upon their own roles as change agents in the field. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6913 - Reading Recovery: Practicum (4 Credits)

A practicum which refines the participants' understanding of literacy acquisition and finalizes preparation to implement the Reading Recovery Program within their school/district. Max hours: 4 Credits.

Grading Basis: Letter Grade

LCRT 6915 - Seminar and Practicum in Literacy Professional Development (3 Credits)

This final practicum is designed for teachers to enhance their education as reading professionals in two ways. First, by continuing to reflect on and analyze their own and others' teaching, participants will deepen their understanding of how to assess and design instruction based on the needs of students. Second, through structured coaching activities, participants will improve their skills in providing literacy leadership. Max hours: 3 Credits. Max hours: 3 Credits.

Grading Basis: Letter Grade

LCRT 6950 - Master's Thesis (4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

Management (MGMT)

MGMT 5800 - Special Topics in Management (3 Credits)

A number of different topics in management are offered under this course number. Consult the Schedule Planner for current course offerings.

Prerequisites vary depending on the topic and instructor requirements.

Cross-listed with MGMT 4950. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MGMT 5939 - Internship (1-3 Credits)

Supervised experiences involving the application of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

MGMT 6020 - Leadership in Difficult Times (3 Credits)

The test of a leader often is their ability to lead their organizations through difficult times and crises. Such situations could be downsizing, product defects, ethical violations, a terrorist attack or a natural disaster. Successful management of these situations can strengthen and renew the organization. Inability to manage these situations can tarnish the organization's reputation and threaten its survival. This course examines leadership under stress and provides frameworks for categorizing and analyzing these difficult situations. The course also addresses strategies that leaders can use to enable their organizations to manage, recover and learn from these difficult experiences. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6028 - Travel Study Topics (3 Credits)

Join your classmates in an international travel study course to understand the business operations of another culture. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6040 - Managing Global Talent (3 Credits)

This course has two objectives: (1) to understand the impact of cultural differences in the management of people in multinational firms; and (2) to compare and contrast critical human resource issues in the contexts of domestic and international operations. Topics include recruitment, staffing, training, performance appraisal, compensation, and labor and management relations in markets around the world. (This course qualifies as an international elective for the MS in International Business program). Restriction: Restricted to graduate Business majors and NDGR majors with a sub-plan of NBA or NBD, within the Business School. Cross-listed with INTB 6040. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6320 - Leading Organizational Change (3 Credits)

The course focuses on the tasks and skills of a leader that are important for leading organizational change. Topics include: diagnosing problems, creating urgency, building the change team, creating a vision, implementing change strategies, sustaining the momentum and making change stick. These tasks and skills are studied in various change contexts. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6360 - Designing Effective Organizations (3 Credits)

Examines how to design organizations within the context of environmental, technological, and task constraints. The emphasis is on learning how to recognize and correct structural problems through the analysis of existing organizations in which the students are involved. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6380 - Managing People for Competitive Advantage (3 Credits)

Focuses on the management of human resources in organizations. Oriented toward the practical application of human resources management principles in areas such as: equal employment opportunity, affirmative action, human resources planning, recruitment, staffing, benefits and compensation, labor relations, training, career management, performance management, and occupational health and safety.

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6420 - Ethics: A Formula for Success (3 Credits)

Students will learn how to spot and address red flags that foster unethical behavior in both publicly-traded and privately-held businesses. Governance and stakeholder management techniques that incentivize ethical behavior will be highlighted using examples of companies that are financially successful by "doing the right thing." Principle-based ethics are emphasized, namely, integrity, trust, accountability, transparency, fairness, respect, viability, and compliance with the rule of law. Cross-listed with MGMT 3420, ISMG 6885, and ISMG 4785. Restriction: Restricted to graduate business school students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

MGMT 6610 - Business Strategy Lab (3 Credits)

Gain strategy experience collaborating with and consulting to Senior Executives of a client company. This is a hands on, project-based course. Students will analyze a strategic initiative as defined by and with the organization's leadership and provide their client with research, insights and actionable strategic ideas. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6620 - Strategic Management (3 Credits)

Concerned with the development of a general management perspective in establishing the strategic direction for an enterprise. Students gain an understanding of strategy formulation and implementation within the context of the global environment. Cross-listed with BUSN 6710. Restriction: Restricted to graduate majors of ORMG within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors of ORMG within the Business School.

MGMT 6710 - HR: Talent MGT (3 Credits)

This course explores the many aspects of Talent Management including strategic talent planning, recruiting and acquisition, employee development, performance management, engagement and retention, succession planning, and compensation, with a strong focus on recruitment and acquisition. The course demonstrates how each aspect of Talent Management is interdependent. Prereq: MGMT 6380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6720 - Human Resources Management: Training (3 Credits)

Covers training methods, theories, research findings. Students design and deliver their own training program, including collecting and analyzing metrics to gauge training success. Co-req: MGMT 6380. Cross-listed with MGMT 4430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6730 - Human Resources Management: Performance Management (3 Credits)

Focuses on the design and implementation of human resources management systems to assess and enhance employee performance. Areas of study include performance measurement, rater training, goal setting and feedback. Prereq: MGMT 6380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6740 - Human Resources Management: Compensation (3 Credits)

Develop and administer pay systems considering economic and social pressures, traditional approaches and strategic choices in managing compensation. Current theory research and practice. Students design a compensation strategy and a system that translates that strategy into reality. Prereq: MGMT 6380 and BUSN 6530. Cross-listed with MGMT 4450. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6530 and MGMT 6380 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6750 - HRM: Investing in People: HR Analytics (3 Credits)

Managing talent-organization and deployment-and connections between talent and strategy in organizations. Rooted in a systematic, logical approach that challenges traditional ideas. Stresses the logical connections between progressive HR practices and firm performance and the use of data to demonstrate financial impact of the connections. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6760 - Employee Benefits and Workforce Risk Management (3 Credits)

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with MGMT 4460 and RISK 4409/6409. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6781 - Human Resources Management: Career and employment coaching (3 Credits)

Focuses on enhanced approaches to discovering employment opportunities and providing career coaching, with an emphasis on unemployed veterans. Topics include discovering the unique capabilities a job-seeking veteran possesses, addressing the barriers to employment he or she may face, and methods the job seeker can use to educate prospective employers about the contributions to organizational success he or she can make. Cross-listed with MGMT 4481. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6782 - Human Resources Management: Connecting talent with business needs (3 Credits)

Focuses on methods for connecting businesses and public-sector organizations with job seekers who possess the capabilities that will fuel profitable growth and mission success. Topics include networking to establish relationships with hiring decisions makers, exploration conversations to identify an organization's success factors, and identifying job seekers (with a special emphasis on unemployed veterans) with the requisite skills, knowledge, traits, and aptitudes. Cross-listed with MGMT 4482. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6800 - Special Topics in Management (3 Credits)

Current topics in management will be occasionally offered. Consult the 'Schedule Planner' for specific offerings or contact an advisor for information. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6801 - Career Strategies (3 Credits)

The downsizing, restructuring, and re-engineering so prevalent in U.S. industries and companies have strongly affected the job and career market. Every individual must sharpen his/her competencies and skills in order to compete effectively in the changing job market. This course is designed to assist students in understanding and operating in this difficult job market. Using many of the concepts that organizations use in their strategy formulation process, and coupled with individual techniques and skills proven effective in job searches and career planning, this course prepares students to deal with the issues involved in finding a job and pursuing a career. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6803 - Visionary Leadership (3 Credits)

Examines the challenges faced by visionary leaders and the approaches used by these individuals (creation, articulation, and implementation of vision) to transform organizations. Participants utilize these approaches employed by effective leaders to develop plans for their own organizational success. Group experiences, applied readings, and videos are used to clarify the opportunities available. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6804 - Negotiation and Conflict Management. (3 Credits)

Designed as a seminar in negotiation and conflict management. Students will practice and develop negotiation and conflict management skills as they use them to craft deals and resolve differences. Students will learn how negotiation and conflict management strategies and tactics vary depending on the situation encountered. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6806 - Corporate Entrepreneurship (3 Credits)

Competitive performance in a global economy requires continuous innovation and new business growth. The creation and development of new ventures is a primary strategy for internally-generated growth. Managing innovation and new ventures requires attitudes, knowledge, and practices different from those usually required for the management of mature business units. This course provides the perspective, knowledge, and specific skills required for successful entrepreneurial management. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6808 - Leadership Development (3 Credits)

Instruction in the design and practice of leadership development. Case studies of effective organizations will be examined and a variety of assessment and development activities will be completed as part of the course. Students will learn how to develop others while experiencing the development techniques first hand. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6820 - Management Field Studies (3 Credits)

The objective of this course is to provide an opportunity for the in-depth examination of an actual management problem in a local organization. Much like an independent study conducted under faculty guidance, each student will execute a unique project suited to his or her interests. Priority is given to MGMT students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6821 - Managing for Sustainability (3 Credits)

This course will consider how companies are using social responsibility as a competitive advantage. The so-called green revolution is calling for organizations to take on increasing responsibility for environmental conservation, employee well being, and community development. This course considers how organizations can work with various stockholders (employees, customers, communities, society-at-large) to develop and promote mutually beneficial products and solutions to key social needs and concerns. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6822 - Business Ethics and Corporate Social Responsibility (3 Credits)

Covers business ethics and corporate social responsibility in the global contexts of employment, marketing, product liability, the environment and other areas. Students compare ethical theories, including utilitarianism, Kantian, Rawlsian, stockholder, stakeholder and social contract and apply some or all of these theories to actual and hypothetical case studies. The doctrine of corporate social responsibility is defined and explored and diverging views of corporate social responsibility are discussed. Examples of how corporate social responsibility can increase a company's goodwill and net income are analyzed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6823 - The Sustainable Business Opportunity (3 Credits)

This course examines the negative impact of a rapidly growing global economy on the natural and human environment. It shows that the need to create a more sustainable global economy represents a huge opportunity for business and how sustainability-based strategies drive innovation, competitive advantage and improved financial performance. It will examine both environmental aspects of sustainability like green supply chains, lifecycle analysis, energy and water efficiency, as well as initiatives that nurture and enhance the value of our human resources such as community development, employee and customer relations, employee wellness, telecommuting, and other stakeholder engagement in sustainability. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MGMT 6824 - Sustainable Business/CSR Field Study (3 Credits)

Gain practical, hands-on experience with aspects of sustainable business and/or corporate social responsibility. Work with a local company/non-profit/or government organization under the direction of an executive to conduct a sustainability-focused project which is important to the organization's sustainability initiative. Prereq: Completion of one or more sustainability focused courses or permission of instructor. Cross-listed with MGMT 4824. Max hours: 3 Credits.

Grading Basis: Letter Grade

Pre: ACCT 6285orBUSN 6826or6830or6850or6870orDSCI 6826/BANA 6730orENTP 6642 or 6644or6808or6858or6860orINTB 6870orMGMT 6821or6822or6823orMKTG 6830 Restriction: Grad and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

MGMT 6825 - Sustainable Change Leadership: Turning Business Into a Force for Good (3 Credits)

This course develops leadership from the perspective of managing the people side of change required to transform a traditional business to one that is not only financially successful but also a genuine "force for good" for our natural and social environment. The B Lab Impact Assessment tool is used to measure, monitor, and link sustainable business practices to drive continuous improvement and innovation. Students will conduct hands-on, practical work with local businesses to develop change leadership skills as they relate to sustainability. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Cross-listed with MGMT 4825. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MGMT 6826 - Business for a Better World (3 Credits)

Introduces the main concepts and tools of sustainable business, such as life-cycle analysis, circularity, Context-based sustainability, carbon footprinting, market failure, closed-loop systems, DfE (Design for the Environment), corporate sustainability reporting, then examines how companies can move from doing less bad to making the world better. Note: Typically offered in the Fall. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall.

MGMT 6827 - Global Climate Change (3 Credits)

Global climate change may be one of the most important challenges facing business in the 21st century. This course will introduce the potential impacts of climate, then discuss possible regulatory responses to and business risks and opportunities that may emerge if climate change occurs. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6830 - Sports and Entertainment Management (3 Credits)

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, managing revenue streams, managing media, managing for effectiveness, managing post-merger integration, leadership and leading change. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6832 - Law and Negotiation in the Sports/ Entertainment Industries (3 Credits)

Provides an overview of major legal issues in the sports and entertainment industries. Students develop the skills required to negotiate contracts in these industries. Topics include contracts with athletes (agency, player and sponsorship), stadium financing and sports franchises, labor law and collective bargaining agreements, entertainment contracts in the music, film and live theater fields and copyright, trademark and tort law principles in the sports and entertainment industries. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6834 - London Calling: Global Sports and Entertainment Management (3 Credits)

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MKTG 4834, and MKTG 6834. Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6840 - Independent Study (1-8 Credits)

Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MGMT 6950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Additional Information: Report as Full Time.

Marketing (MKTG)

MKTG 5939 - Internship (1-3 Credits)

Supervised experiences involving the applications of concepts and skills in an employment situation. Prereq: 21 semester hours and 3.5 GPA.

Repeatable. Max Hours: 9 Credits.

Grading Basis: Pass/Fail Only

Repeatable. Max Credits: 9.

MKTG 6010 - Marketing Strategy (3 Credits)

Focuses on marketing strategy and marketing planning. Addresses the formulation and implementation of marketing plans within the context of the overall strategies and objectives of both profit and not-for-profit organizations. There is heavy emphasis on group projects and presentations. Note: This course is intended to be taken near the end of your program. Prereq: BUSN 6560 completed with a C or better. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6560 completed with a C or better Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6020 - Marketing Challenges at the Global Frontier (3 Credits)

Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasized analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Emphasis on practice through the use of projects and speakers. Coreq: BUSN 6560. Instructor may waive coreq for business students. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Note: students cannot receive credit for both MKTG 6020 and INTB 6026. Cross-listed with INTB 6026. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6030 - Sales and Sales Force Management (3 Credits)

Focuses on issues in personal selling and managing the field sales force. Deals with organization sales analysis, forecasting, budgeting and operating, with particular emphasis on the selling task, recruiting, selection, training, compensation, supervision and motivation. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Spring.

MKTG 6040 - Services Marketing for Traditional and Creative Industries (3 Credits)

Service industries such as health care, finance, information, entertainment, retailing, government, and professional services comprise 80% of the total employment and GDP of the US and an increasing share of GDP in both other developed and emerging economies. This course provides students with the skills to design and deliver high quality services, improve customer satisfaction, and effectively manage service organizations. It also addresses how small, medium, and large firms can develop marketing plans and strategies in the current service environment. A variety of teaching methods may be used to demonstrate these concepts, such as cases, projects, field experiences, and/or guest speakers. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6050 - Market Research Analytics I (3 Credits)

The objectives relate to effective marketing information management and include: (1) developing an understanding of the techniques and procedures that can be used to generate timely and relevant marketing information; (2) gaining experience in developing and analyzing information that is decision oriented; and (3) being able to make recommendations and decisions based on relevant and timely information. Computer analysis and projects are employed. Coreq: BUSN 6560 or 6530 or BANA 6610. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 or 6530 or BANA 6610 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Typically Offered: Fall, Spring.

MKTG 6051 - Market Research Analytics II (3 Credits)

This course focuses on advanced topics and applications in marketing research. A variety of teaching techniques will be used. Prereq: MKTG 6050. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MKTG 6050 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School

MKTG 6060 - Consumer Intelligence—Psychology and Behavior (3 Credits)

Why do consumers buy? How can marketing activities influence buyer behavior? Answers to these questions are key to marketing success & business fortune. In this course, we explore how to understand the heart & soul of consumers & examine the strategic implications of consumer psychology. Course participants conduct a market segmentation project that identifies & dissects various buyer groups within a chosen market. Restriction: Restricted to graduate business students or NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MKTG 6070 - Brand Identity & Marketing Communication Strategy (3 Credits)

A brand's identity has a substantial influence on an organization's financial wealth. But brand identity is not simply the result of a great product or a creative ad. Utilizing many real examples, historic approaches, and current trends, this course explores how integrated marketing communications help build a brand identity that reverberates with consumers. Participants create an integrated marketing communications campaign. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6080 - Marketing in Emerging Markets (3 Credits)

Explores problems, practices and strategies involved in marketing goods and services in emerging markets. Emphasizes analysis of uncontrollable environmental forces, including cultures, government, legal, systems and economic conditions as they affect marketing planning. Coreq: BUSN 6560. Note: students cannot receive credit for both MKTG 6080 and INTB 6082. Cross-listed with INTB 6082. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6090 - Big Data Customer Relationship Management (3 Credits)

Involves the management of customer relationships to maximize customer service and its associated benefits at minimal cost. Includes services marketing concepts and techniques, IT applications, and software. Designed to acquaint students with practices and issues in state-of-the-art customer relationship management systems in an array of different types of organizations. The course initially focuses on the nature of customer relationship management (CRM) the interaction between strategic management planning, corporate culture and CRM. Other topics examined include successful models of CRM, managing the employee or CRM interface, marketing research, and CRM, and customer trust, loyalty, CRM customer service levels, customer service levels, customer profitability or metrics, selecting and integrating CRM software, CRM integration and timing of CRM roll-out. Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6091 - Strategic Product Marketing (3 Credits)

Familiarizes students with key theories and practices regarding products. Successful development of a new product, or extending the life cycle of an existing product. Outlines and necessitates the understanding of product development, key concepts related to successful product management over the course of its life cycle including the way the product function adds synergy to other marketing activities and, in turn, benefits from them. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6092 - Digital Media Marketing - Tools and Analytics (3 Credits)

This course focuses on digital marketing management, skills, applications, and analytics. Topics include web design, web analytics, online advertising, search engine optimization, search engine advertising, email marketing, social media marketing and online reputation management. Students engage in hands on applications in developing digital marketing campaigns in both simulations and for real brands.

Coreq: BUSN 6560. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6093 - Hot Topics in Digital Marketing (3 Credits)

Students attend The Digital Marketing Summit Conference in Denver, CO. Conference speakers include Leaders in the field of Digital Marketing. Participants will learn about the latest & greatest hot trends in Digital Marketing going on NOW! This conference also includes networking sessions with national industry Leaders and Denver's "Digiterati" community. Numerous state of the art topics include Content Marketing, Search & SEO, Social Media, Mobile, Social Intelligence Data, Wearables, and Engagement. The course builds on this content in a HYBRID format in which participants continue to engage in online learning & discussion, while applying these concepts to create their own unique digital programs. The Digital Conference constitutes the classroom portion of the course and the remainder is completed via additional reading & application under the direction of the course Professor. Enrollment is limited so make plans early. Contact the Director of the Marketing Discipline (Vicki.lane@ucdnever.edu) to reserve your spot. Special conference fees apply. Restriction: Restricted to graduate majors within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors within the Business School.

MKTG 6094 - Marketing Issues in the Chinese Environment (3 Credits)

This course assesses numerous marketing and marketing related topics in the Chinese environment with the objective of helping the graduate student develop managerial and marketing expertise. In specific, the course pinpoints key developments in the Chinese business environment, develops expertise in conducting market opportunity analysis, assesses market entry conditions and strategies and applies marketing mix strategies in the context of the Chinese environment. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course. Cross-listed with INTB 6094. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6200 - CRM, Big Data, and Marketing Metrics (3 Credits)

CRM (Customer Relationship Management) involves the management of customer relationships to maximize customer benefits at minimal cost. It facilitates decision making about marketing strategies and tactics that are informed by the actual financial outcomes of these decisions. This course provides a toolkit of skills that will help in three areas, 1) identifying important marketing metrics, 2) making accurate assessments of metrics, and 3) applying the results to future decisions. Other topics include successful models of CRM, big data, marketing research, customer trust, customer loyalty, customer profitability, and CRM software. Coreq: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560 Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6700 - Marketing Travel Study (3 Credits)

This is a 2-week travel course, designed to focus on the marketing of the specific country we visit. In the past the travel course has been to Spain and Costa Rica, but the country of destination may be different every time (usually offered every other year). While in the country, students will visit companies (such as advertising agencies, marketing research firms, local grocery stores, marketing departments of multinational corporations, etc.), have lectures/discussions on marketing in that country and work on a marketing plan for a local company or not-for-profit organization.

Prereq: BUSN 6560 with a C or higher. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6800 - Topics in Marketing (3 Credits)

Courses offered irregularly for the purpose of presenting new subject matter in marketing. Consult the current 'Schedule Planner' for semester offerings. Prereq: BUSN 6560. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6820 - Sports & Entertainment Marketing (3 Credits)

This course focuses on techniques for formulating marketing plans for various types of sports organizations. The course deals with marketing issues particularly germane to sports organizations such as: fans as consumers, fan loyalty, sports pricing, servicescapes, player development and sports sponsorships. This course includes lectures, guest speakers, cases, examinations and student group projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6822 - "Fan"tastical Consumers of American Sports and Entertainment (3 Credits)

This course explores the study of consumer behavior via the lens of American Sports and Entertainment. Class occurs while students attend a variety of sports and entertainment performances. Students engage in experiential learning via participant and observation research techniques as they attend live performances of American sports and entertainment. The class will attend and study consumers and fans in a variety of venues, (e.g., Baseball, LaCrosse, Fun Run, Hike, Golf, Symphony, Rock Concert Festival, Jazz Concert Festival, American Ninja Warrior filming, Broadway Play, Cirque de Soleil, and Museum exhibition). These performances primarily take place in downtown centers, e.g., Pepsi Center, Denver Performing Arts Complex, Coors Field, Sports Authority Field at Mile High, Walk or run through various Denver parks, 16th St. Mall, The Civic Center, the Denver Art Museum. Students will engage in observational and immersive consumer behavior research techniques as part of their experience. They will complete assignments relevant for consumer understanding and business practice. Special fee. Co-Req: BUSN 6560. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6824 - Sales and Negotiation for Consumer, Services, Sports, and Entertainment Industries (3 Credits)

This course focuses on developing sales skills and techniques for success in the sports and entertainment industries. Students also develop the skills required to negotiate contracts in these industries. Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6560. Restriction: Restricted to graduate business students or NDGR majors and a sub-plan of NBA or NBD

MKTG 6826 - The Sports and Entertainment Industry (3 Credits)

This course is designed as a speaker series of sports and entertainment industry elite focusing on: industry trends, strategic planning, management challenges, financing in sports and entertainment business (e.g., stadium/venue financing, sports team valuation, entertainment event guarantee estimation, player/artist salary issues, franchises, and managing disparate revenue streams), and major legal issues in the sports and entertainment industries (entertainment contracts, copyright, trademark and tort law). Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MKTG 6830 - Marketing & Global Sustainability (3 Credits)

Marketing & Global Sustainability focuses on the role of marketing in sustainable for-profit and not-for-profit companies from a global perspective. The course examines sustainable business practices and trends; green brands, green labels, and greenwashing; socially-conscious and "green" customer segments; innovating for sustainable new products and services; sustainable retailing and supply chains; and sustainability as a competitive advantage. The course will employ a variety of pedagogical techniques including lectures, discussion, guest speakers, case studies, and projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

MKTG 6834 - Global Sports & Entertainment Management (3 Credits)

Through 2 weeks of visiting organizations and talking with industry elite in London a broader perspective on the Sports and Entertainment Industry is gained. Students will be asked to do advanced reading, participate in discussions, keep a journal and write a reflection paper at the end of the experience. Site visits (to be confirmed) include: Arsenal Football Club, Premier League, the O2 Arena, NHL and NBA regular season games in London, 2012 Olympics Committee, Formula One, Hollywood Studio-International Finance Office, Theatre, Lord's Cricket Ground, All England Lawn Tennis Club/Wimbledon and the office of the Minister of Sport. Cross-listed with MGMT 4834, MGMT 6834, and MKTG 4834. Restriction: Restricted to graduate business school students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business school students.

MKTG 6840 - Independent Study (1-8 Credits)

Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Prereq: Permission of instructor. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restrictions: Restricted to graduate majors and NDGR majors with a sub-plan of NBA within the Business School.

Master of Integrated Sciences (MINS)

MINS 5000 - Topics (3-4 Credits)

With prior approval by a candidate's advisor, an MIS candidate may enroll in an upper division course in science, computer science, mathematics, and complete additional work for graduate credit. Prereq: MIS candidate with 12 hours of upper division (4000 level) or graduate level work completed. Term offered: fall, spring, summer. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Prereq: MIS candidate with 12 hours of approved coursework completed and Program Director approval.

MINS 5200 - Research Methods in Interdisciplinary Science (3 Credits)

This course introduces methods used in interdisciplinary research in the physical and natural sciences, mathematics, and computer science and prepares students for developing research-based Master's project/thesis proposals. Topics include the scientific method and ethics, experimental design, data collection and analysis, literature searches, evaluation of scientific literature, scientific writing, and oral presentation. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5880 - Directed Research (1-3 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5939 - Internship (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: MIS Candidate and Program Director approval (consent required).

MINS 5950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Prereq: MIS Candidate and Program Director approval (consent required).

Additional Information: Report as Full Time.

MINS 5960 - Master's Project (1-4 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: MIS Candidate and Program Director approval (consent required). Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Prereq: MIS Candidate and Program Director approval (consent required).

Additional Information: Report as Full Time.

Math Content Knowledge for Ed (MCKE)

MCKE 5000 - Algebraic Patterns and Functions I (4 Credits)

Systematic study of the core elements of algebra: linear, quadratic, exponential, logarithmic functions and their graphs. Includes modeling using graphing calculators and real world applications. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of project director. Max hours: 4 Credits.

Grading Basis: Letter Grade

MCKE 5004 - Statistics and Probability (3 Credits)

Studies the collection, presentation, and analysis of data; and elements and applications of counting discrete probability. Includes real world applications and technology. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of project director. Max hours: 3 Credits.

Grading Basis: Letter Grade

MCKE 5005 - Geometry (4 Credits)

Systematic study of advanced geometric concepts: history of geometry and measurement, patterns among shapes, 2- and 3-dimensional shapes, constructions, symmetry or transformational geometry. Includes applications and activity-oriented instruction. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of project director. Max hours: 4 Credits.

Grading Basis: Letter Grade

MCKE 5006 - Mathematics of Change (3 Credits)

Systematic study of the application of calculus to the analysis of changing systems in real world applications. Emphasizes the connections that exist between calculus and aspects of middle school curricula. Concepts are linked to other scientific, mathematical, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 or equivalent. Prereq: Graduate standing. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5007 - Discrete Math—Counting the Possibilities (4 Credits)

Systematic study of basic techniques in discrete mathematics and their various applications: permutations and combinations, inclusion or exclusion, pigeonhole principle, graph theory, and recursive pattern solving. Applications to topics such as network analysis and voting theory are stressed. Concepts are linked to other scientific, mathematical, pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5000 or equivalent. Prereq: Graduate standing. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5008 - Discovery and Use of the History of Math (4 Credits)

Systematic study of the people, events, ideas and issues from the history of mathematics, focusing on historical topics that are central to the discipline and teaching of mathematics and emphasizing web research of historical topics of interest. Concepts are linked to other scientific, mathematical, and pedagogical domains. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Prereq: permission of the project director. Max Hours: 4 Credits.

Grading Basis: Letter Grade

MCKE 5009 - Math Modeling—Using and Applying Math (4 Credits)

Systematic study of math modeling using algebra, geometry, discrete mathematics, rates of change, and statistics to solve real-world problems in areas such as finance, biology, economics, and physics. Concepts are linked to other scientific, mathematical, societal, and pedagogical domains. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 5009 or equivalent. Prereq: Graduate standing. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5018 - Topics in Mathematics Education for Teachers (0.3-50 Credits)

Topics vary from semester to semester. Designed for professional mathematics teachers. This course will not count towards a degree in Applied Mathematics. Consent of the instructor required for enrollment. Repeatable. Max Hours: 50 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 50.

MCKE 5140 - Introduction to Modern Algebra (3 Credits)

Studies the fundamental algebraic structures used in modern mathematics. Topics include groups, rings, fields, and polynomials. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4140. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5210 - Higher Geometry I (3 Credits)

Studies the foundations of modern geometry by examining axiomatic systems for various geometries, with an emphasis on non-Euclidean hyperbolic geometry. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 3210. Max hours: 3 Credits.
Grading Basis: Letter Grade

MCKE 5310 - Introduction to Real Analysis I (3 Credits)

Calculus of one variable, the real number system, continuity, differentiation, integration theory, sequence and series. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 2421 and MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4310. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5408 - Applied Graph Theory (3 Credits)

Introduces discrete structures and applications of graph theory to computer science, engineering, operations research, social science, and biology. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits, matching and covering problems, shortest route and network flows. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4408. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5409 - Applied Combinatorics (3 Credits)

Major emphasis is on applied combinatorics and combinatorial algorithms, with applications in computer science and operations. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, and block designs. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Note: this course assumes that students have completed MATH 3000 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4409. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MCKE 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

Math Education (MTED)

MTED 5002 - Elementary Mathematics Teaching I (3 Credits)

Prepares elementary teachers to teach mathematics to PreK-6 students while applying principles of the National Council of Teachers of Mathematics to mathematical learning. Teachers explore ways to help all elementary students become flexible and resourceful mathematical problem solvers. Cross-listed with MTED 4002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: TCHR-MA plan or BMA subplan.

MTED 5003 - Elementary Mathematics Teaching II (3 Credits)

Develops the mathematical and pedagogical understandings and competence of elementary teachers, focusing on instructional assessment, principles, and practices. Cross-listed with MTED 4003. Prereq: MTED 4002 or MTED 5002. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: MTED 5002 or MTED 4002. Restriction: TCHR-MA plan or BMA subplan.

MTED 5030 - Theories Of Mathematics Learning (3 Credits)

Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits.
Grading Basis: Letter Grade

MTED 5040 - Mathematics Teaching - Theory and Practice (3 Credits)

Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

MTED 5050 - Critique Of Mathematics Education Research (3 Credits)

Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits.
Grading Basis: Letter Grade

MTED 5060 - Developmental Pathways In Students' Mathematical Thinking (3 Credits)

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits.
Grading Basis: Letter Grade

MTED 5070 - (Re)Humanizing the Teaching and Learning of Mathematics (3 Credits)

Expands educators' conceptions of society's role in determining what counts as mathematics to be taught and learned. Develops understanding of historical and systemic marginalization in mathematics education. Increases abilities to address issues of privilege and oppression that impact students' opportunities. Max hours: 3 Credits.
Grading Basis: Letter Grade

MTED 5300 - Curriculum and Methods for Teaching Mathematics (3 Credits)

Fosters teachers' use of task-based mathematics pedagogy, including orchestrating students' mathematical discourse, to develop mathematics classrooms in which the teacher builds from students' current understandings, accommodates for students' differences, and has high expectations for all students. Cross-listed with MTED 4300. Max hours: 3 Credits.
Grading Basis: Letter Grade

MTED 5301 - Assessment and Equity in Mathematics Instruction (3 Credits)

Examines mathematics assessment and equity from both a teacher's and a student's perspective. Focuses on assessment as a process, during which a teacher gathers evidence of students' mathematical knowledge and understanding and then uses that evidence to make instructional decisions. Prereq: Concurrent enrollment in an internship or permission of instructor. Cross-listed with MTED 4301. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5400 - Mathematics for Elementary Teachers (3 Credits)

Key mathematical concepts for K-6 teachers informed by NCTM & Common Core State Standards, such as place-value number systems, rational, proportional, & algebraic reasoning, geometrical concepts, & statistical/probability ideas. Students' meaningful, enjoyable learning is promoted via problem solving activities. Cross-listed with MTED 3040. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5619 - Expanding Conceptions of Number: Quantity and Operation (3 Credits)

Teachers' learning will focus on quantities and operations in place value number systems, how students understand such systems, and how teaching may promote students' progress. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5620 - Developing Fractional & Proportional Reasoning (3 Credits)

Teachers' learning will focus on quantities and operations involved with ratio, fraction, and proportion; and on how students understand ratio, fraction and proportion; and how teaching may promote students' progress. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

MTED 5621 - A World of (Different) Numbers: Quantity and Operation (3 Credits)

Develops K-12 teachers' understanding of number systems and the ability to foster students' understanding. Focuses on number, quantity, and operation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Cross-listed with MTED 4621. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5622 - Expanding Conceptions of Algebra (3 Credits)

Develops K-12 teachers' understanding of algebra concepts and the ability to foster students' understanding. Focuses on equivalence, variable, covariation, and function. Applicable to teaching students at all grade levels in line with the K12 Common Core Standards. Cross-listed with MTED 4622. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5623 - Geometrical Ways Of Reasoning (3 Credits)

Develops K-12 teachers' geometrical reasoning and the ability to foster students' reasoning. Addresses transformation, measurement, classification, objects, imagery, formulas, and investigation. Applicable to teaching students at all grade levels in line with the K-12 Common Core Standards. Cross-listed with MTED 4623. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 5840 - Math Education Independent Study (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MTED 7030 - Theories Of Mathematics Learning (3 Credits)

Develops educators' knowledge of foundational theories and conceptual frameworks in mathematics education. MTED 5030 and 7030 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7040 - Mathematics Teaching - Theory and Practice (3 Credits)

Develops educators' research-based understandings and practices of PreK-12 mathematics teaching and learning. MTED 5040 and 7040 are cross-listed. Repeatable. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MTED 7050 - Critique Of Mathematics Education Research (3 Credits)

Develops educators' understanding of various research studies in mathematics education, including research focusing on mathematics teaching and learning, attending to students' mathematical reasoning, and teaching mathematics for social justice and equity. Increases educators' competence, confidence and enthusiasm in critiquing research. MTED 5050 and 7050 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7060 - Developmental Pathways In Students' Mathematical Thinking (3 Credits)

Fosters educators' development of research-based ways of determining (a) what to look for, (b) how to look for, (c) how to synthesize and report on, and (d) how to incorporate in pedagogy data-grounded inferences about children's mathematical thinking. MTED 5060 and 7060 are cross-listed. Max hours: 3 Credits.

Grading Basis: Letter Grade

MTED 7840 - Math Education Independent Study (1-6 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Mathematics (MATH)

MATH 5010 - History of Mathematics (3 Credits)

A history of the development of mathematical techniques and ideas from early civilization to the present, including the inter-relationships of mathematics and sciences. Note: this course assumes that students have mathematical knowledge equivalent to MATH 1401. Prereq: Graduate standing. Not open to students who have had MATH 4010. No credit for applied math graduate students. Cross-listed with MATH 4010. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

MATH 5012 - An Advanced Perspective on Number and Operation (2 Credits)

Advanced study of number and operation, including why the various procedures from arithmetic work and connections to algebraic reasoning. Focuses on using rigorous mathematical reasoning and multiple representations to explain concepts. Note: Does not count toward graduate degrees in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4012. Max hours: 2 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5013 - An Inquiry-based Approach to Geometry (1 Credit)

An inquiry-based approach to middle-level and Euclidean geometry. Topics include: polygons and the angle relationships, constructions, Pythagorean theorem and perimeter, area and volume, similarity and congruence, circles. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3000 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4013. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5014 - Statistical Knowledge for Teaching (1 Credit)

A problem-based statistics seminar aimed at secondary teachers. Topics include: the central limit theorem, the law of large numbers, probability, measures of central tendency and variability, sampling distributions, regression, and hypothesis testing. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3800 or an equivalent course. Prereq: Graduate standing. Cross-listed with MATH 4014. Max hours: 1 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5015 - Capstone Course for Secondary Teachers (3 Credits)

High school mathematics from an advanced perspective: analyses of alternative definitions, extensions and generalizations of familiar theorems; discussions of historical contexts in which concepts arose; applications of mathematics. Note: Does not count toward a graduate degree in applied mathematics. Note: this course assumes that students have taken MATH 3210, 4310 and 3140 or equivalent. Prereq: Graduate standing. Cross-listed with MATH 4015. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

MATH 5016 - RM-MSMSP Research Experience for Teachers - Math Cohort (1-6 Credits)

The Research Experience for Teachers (RET) program is a five-week research exploration in which twelve RM-MSMSP teachers will raise their level of relevant mathematics understanding by engaging in a "hands on" workshop, transforming what they have learned into new curricular materials that will improve the mathematics abilities of their students and hopefully stimulate them to consider a STEM career. Note: Credit may not apply toward any CLAS degree. Max hours: 6 Credits.

Grading Basis: Letter Grade

MATH 5017 - Topics in Mathematics for Teachers (0.3-50 Credits)

Topics vary from semester to semester. Designed for professional mathematics teachers. Note: This course will not count toward a degree in applied mathematics. Prereq: permission of instructor. Repeatable. Max Hours: 50 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 50.

MATH 5027 - Topics in Applied Mathematics (3 Credits)

Selected topics in mathematical problems arising from various applied fields such as mechanics, electromagnetic theory, economics and biological sciences. Prereq: Graduate standing in Applied Mathematics, Statistics, or Dual MATH MA/ECON MA, or permission of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate standing in Applied Mathematics, Statistics, or Dual MATH MA/ECON MA.

MATH 5070 - Applied Analysis (3 Credits)

Metric spaces, uniform convergence, elements of Banach spaces, elements of functions of complex variable. Problem solving and independent proof writing. Review of selected advanced topics in analysis for the PhD preliminary examination. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of two semesters of undergraduate real analysis (e.g., MATH 4310 and MATH 4320). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Spring.

MATH 5110 - Theory of Numbers (3 Credits)

Every other year. Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Prereq: Graduate Standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in mathematical proof (e.g. MATH 3000). Cross-listed with MATH 4110. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5135 - Functions of a Complex Variable (3 Credits)

Infrequent. The complex plane, infinite series and products, elementary special functions, Cauchy-Riemann equations, conformal mapping, complex integration, Cauchy integral theory, and residue theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of undergraduate-level real analysis (e.g. MATH 4310, MATH 4320) or to a semester of graduate-level real analysis (e.g., MATH 5070). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5198 - Mathematics for Bioscientists (3 Credits)

Infrequent. Develops mathematical reasoning: introduces linear algebra, discrete structures, graph theory, probability, and differential equations, using applications to molecular biology. Note: No credit for mathematics or engineering students. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have mathematical knowledge equivalent to two semesters of calculus (e.g., MATH 1401, MATH 2411). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5310 - Probability (3 Credits)

The course covers axioms of probability, combinatorial probability, conditional probability, random variables (discrete, continuous, and multivariate), expected value (mean, moments, variance, covariance, etc.), limit theorems (laws of large numbers, Central Limit Theorem), Poisson processes and Markov chains. Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 5320 - Statistical Inference (3 Credits)

Methods for constructing sampling distributions; sufficient, minimal sufficient, ancillary and complete statistics; methods for constructing and evaluating point estimators; estimator optimality; methods for constructing and evaluating hypothesis tests; methods for constructing and evaluating confidence interval estimators; asymptotic properties of estimators. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Typically Offered: Spring.

MATH 5337 - Intro to Statistical and Machine Learning (3 Credits)

This is an applied, hands-on course in statistical and machine learning.

This course will introduce students to the general framework, best practices, model training, and assessment for machine learning methods from the viewpoint of statistics. Both supervised and unsupervised methods are covered including penalized regression, k-nearest neighbors, clustering, and neural networks. Additional machine learning topics such as random forests and support vector machines are included as time permits. Ultimately, students will learn how and why to use a particular method, how to validate and explain the results, and apply the methods to real data. Note: It is recommended that students are comfortable learning a statistical computing language such as R or Python as these will be taught alongside the course material. Students with minimal programming experience should expect to spend more time learning the programming language throughout the course. Prereq: MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763 with a C- or higher. Students who have completed a different statistics course that contains regression and computing may seek instructor permission to enroll. Cross-listed with MATH 4337. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MATH 4387 or MATH 5387 or MATH 4830 or MATH 5830 or BIOL 3763 with a C- or higher.

MATH 5350 - Mathematical Theory of Interest (3 Credits)

Rates of interest, term structure of interest rates, force of interest, yield rate, principal, equation of value, annuity, perpetuity, stocks, bonds, other financial instruments. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5351 - Actuarial Models (3 Credits)

Severity models, frequency models, aggregate models, risk measures, ruin theory, construction and selection of empirical models, credibility, simulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in probability and statistics (e.g. MATH 4810, MATH 4820, MATH 3382). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5387 - Applied Regression Analysis (3 Credits)

Topics include simple and multiple linear regression, model diagnostics and remediation, and model selection. Emphasis is on practical aspects and applications of linear models to the analysis of data in business, engineering and behavioral, biological and physical sciences. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in statistics (e.g., MATH 4820). No co-credit with MATH 4830/5830. Cross-listed with MATH 4387. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Typically Offered: Fall.

MATH 5388 - Machine Learning Methods (3 Credits)

Regression, neural networks, clustering, support vector machines, random forests, and other prediction/classification techniques will be used to solve supervised and unsupervised learning problems. This course will connect each topic with the underlying mathematical foundation such as optimization methods and statistical inference. A key focus is deriving the methods and their properties to guide proper application. Students will learn how to apply methods using standard libraries from Python, R, or Matlab. Prereq: Graduate standing in Applied Mathematics or Statistics or in one of the 4+1 BS-MS programs. Cross-listed with MATH 4388. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics or in one of the 4+1 BS-MS programs. (AMEN-MS, AMEN-PHD, STAT-MS, MATH BS-BMA).

MATH 5390 - Game Theory (3 Credits)

Zero-sum and non-zero-sum games; Nash equilibrium and the principle of indifference; Shapley value and other concepts of fair division; Evolutionary game theory, ESS, and evolutionary population dynamics. Applications in economics, business, and biology. Note: this course assumes that students have the equivalent of MATH 2421, 3191 and 3800 or 4810. Prereq: Graduate standing in Applied Mathematics. Cross-listed with MATH 4390. Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5394 - Experimental Designs (3 Credits)

Designs covered will include: completely randomized, complete block, split plot, incomplete block, factorial and fractional factorial designs. Additionally, power and study design for non-experimental studies will be covered. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of an undergraduate-level course in regression analysis (e.g., MATH 4387). Cross-listed with MATH 4394. Term offered: spring of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 5410 - Modern Cryptology (3 Credits)

Every other year. Deals with the mathematics that underlies modern cryptology. Topics include: classical cryptology, public and private key cryptosystems, secret sharing schemes, authentication schemes, linear feedback shift registers, discrete logarithm and elliptic curve-based schemes. Note: this course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Prereq: Graduate standing in Applied Mathematics. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5432 - Computational Graph Theory (3 Credits)

Infrequent. Algorithmic techniques in graph theory and other discrete mathematics areas. Typical topics include: branch-bound algorithms, matching, colorings, domination, min-plus algebra, simulated annealing and related heuristics, NP-completeness theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor.

Note: This course assumes that students have the equivalent of an undergraduate-level course in graph theory (e.g., MATH 4408). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5446 - Theory of Automata (3 Credits)

Infrequent. Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, Turing machines). Additional topics include decidability and computability issues. Prereq: Graduate standing in Applied Mathematics or permission of the instructor.

Note: This course assumes that students have the equivalent of an undergraduate-level course in abstract algebra (e.g., MATH 4140). Cross-listed with CSCI 5446. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5490 - Network Flows (3 Credits)

Every other year. Begins with the classical min-cost flow problem, defined on an ordinary network. Other problems, such as shortest path, are also shown in this class. Both theory and algorithms are presented. Extensions include generalized networks, nonlinear costs, fixed charges, multi-commodity flows and additional applications, such as in communications networks. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: spring of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5576 - Mathematical Foundations of Artificial Intelligence I (3 Credits)

Infrequent. A fundamentals course that complements other approaches, such as in engineering, psychology, and business administration. Here the emphasis is on the mathematical foundations. Topics include logical inference, problem solving, heuristic search, neural nets, analogical reasoning and learning. Models and paradigms also consider different measures of uncertainty. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in data structures (e.g., CSCI 2511) and a course in linear algebra (e.g., MATH 3191). Cross-listed with MATH 4576. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5593 - Linear Programming (3 Credits)

A linear program is an optimization problem that seeks to minimize or maximize a linear function subject to a system of linear inequalities and equations. This course begins with examples of linear programs and variations in their representations. Basic theoretical foundations covered include polyhedra, convexity, linear inequalities and duality. Two classes of solution algorithms are given: simplex methods and interior point methods. The primary emphasis of this course is on mathematical foundations, and applications are used to illustrate the main results.

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Fall.

MATH 5610 - Computational Biology (3 Credits)

Every other year. Basic introduction and mathematical foundations. Topics include comparative genomics; proteomics; phylogeny; dynamic programming and sequence alignment; gene expression arrays and clustering; Bayesian networks; structure prediction and hidden Markov models. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have some programming experience or the equivalent of a programming course (e.g., CSCI 1410) and linear algebra (e.g., MATH 3191 or 3195). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5660 - Numerical Analysis I (3 Credits)

Methods and analysis of techniques used to resolve continuous mathematical problems on the computer. Solution of linear and nonlinear equations, interpolation and integration. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of differential and integral calculus (e.g., MATH 2411) and linear algebra (e.g., MATH 3191 or 3195). Programming experience is strongly recommended. Cross-listed with CSCI 4650, 5660, and MATH 4650. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5661 - Numerical Analysis II (3 Credits)

Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of linear algebra and differential equations (e.g., MATH 3195 or both MATH 3191 and 3200) and programming experience or a first course on numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4660, CSCI 4660 and 5661. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Spring.

MATH 5674 - Parallel Computing and Architectures (3 Credits)

Infrequent. Examines a range of topics involved in using parallel operations to improve computational performance. Parallel architectures, parallel algorithms, parallel programming languages, interconnection networks, and their relation to specific computer architectures. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a course in numerical analysis (e.g., MATH 4650). Cross-listed with MATH 4674. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5718 - Applied Linear Algebra (3 Credits)

Topics include: Vector spaces, practical solution of systems of equations, projections, eigenvalues and eigenvectors, unitary transformations, Schur QR, singular value decompositions, similarity transformations, Jordan forms, and positive definite matrices. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in linear algebra (e.g., MATH 3191). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

Typically Offered: Fall.

MATH 5733 - Partial Differential Equations (3 Credits)

Infrequent. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate sequence in calculus (e.g., through MATH 2421) and differential equations (e.g., MATH 3200 or 3195). Cross-listed with MATH 4733. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5779 - Math Clinic (3 Credits)

The clinic is intended to illustrate the applicability and utility of mathematical concepts. Research problems investigated originate from a variety of sources—industry, government agencies, educational institutions, or nonprofit organizations. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Cross-listed with MATH 4779. Term offered: fall, spring. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 5791 - Continuous Modeling (3 Credits)

Every other year. Surveys mathematical problems that arise in natural sciences and engineering. Topics may include population models, epidemic models, mechanics, heat transfer and diffusion, tomography, pharmaco-kinetics, traffic flow, fractal models, wave phenomena, and natural resource management. Most models discussed are based on differential and integral equations. Emphasis is formulation and validation of models as well as methods of solution. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level courses in differential equations and linear algebra (e.g., MATH 3200 and 3191). Cross-listed with MATH 4791. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5792 - Probabilistic Modeling (3 Credits)

Every other year. Markov chains; Poisson processes, continuous time Markov chains, elementary topics in queuing theory, and some mathematical aspects of Monte Carlo simulation, including random variate generation, variance reduction, and output analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate-level course in probability (e.g., MATH 4810) and some programming experience. Cross-listed with MATH 4792. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5793 - Discrete Math Modeling (3 Credits)

Every other year. Focuses on the use of graph theory and combinatorics to solve problems in a wide variety of disciplines. Applications are selected from computer science, communication networks, economics, operations research, and the social, biological and environmental sciences. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of an undergraduate course in linear algebra (e.g., MATH 3191) and graph theory (e.g., MATH 4408). Cross-listed with MATH 4793. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5794 - Optimization Modeling (3 Credits)

Every other year. Principles of model formulation and analysis are developed by presenting a wide variety of applications, both for natural phenomena and social systems. Examples of optimization models to represent natural phenomena include principles of least time and energy. Examples in social systems include resource allocation, environmental control and land management. Specific applications vary, but are chosen to cover a wide scope that considers dichotomies, such as discrete vs. continuous, static vs. dynamic, and deterministic vs. stochastic. Some computer modeling language (like GAMS) is taught. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. : This course assumes that students have the equivalent of a sequence in calculus (e.g., through MATH 2421) and linear algebra (e.g., MATH 3191). Cross-listed with MATH 4794. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 5830 - Applied Statistics (3 Credits)

Review of estimation, confidence intervals and hypothesis testing; ANOVA; categorical data analysis; non-parametric tests; linear and logistic regression. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Note: This course assumes that students have the equivalent of an introductory course in statistics (e.g., MATH 2830). No co-credit with MATH 4387 or 5387 and doesn't count for Math degrees. Cross-listed with MATH 4830. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

MATH 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: Graduate standing in Applied Mathematics

MATH 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

MATH 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: Graduate standing in Applied Mathematics

MATH 5950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments, and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max hours: 8 Credits. No co-credit with MATH 5960 or MATH 6960.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Additional Information: Report as Full Time.

MATH 5960 - Master's Project (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments, and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. No cocredit with MATH 5950 or MATH 6960.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

Additional Information: Report as Full Time.

MATH 6023 - Topics in Discrete Math (3 Credits)

Topics may include graph theory, combinatorics, matroid theory, combinatorial matrix theory, finite geometry, design theory, and discrete algorithms. Note: Since topic varies by semester, students may register for this course more than once. Note: students should obtain permission from the instructor prior to enrolling in this course. Prereq: Graduate standing in Applied Mathematics. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 6101 - Uncertainty Quantification (3 Credits)

The field of uncertainty quantification is evolving rapidly due to increasing emphasis on models of physical and biological systems that have quantified uncertainties for large-scale applications, novel algorithm development, and new computational architectures that facilitate implementation of these algorithms. In this course, we develop the basic concepts, theory, and algorithms necessary to quantify input and response uncertainties for a variety of simulation models. The topics will include concepts from probability and statistics, parameter selection techniques, frequentist and Bayesian model calibration, propagation of uncertainties, quantification of model discrepancy, surrogate model construction, and local and global sensitivity analysis.

Note: A basic knowledge of probability, linear algebra, ordinary and partial differential equations, and introductory numerical analysis techniques is assumed. Coursework will typically consist of projects. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation MATH 5070, MATH 5718, MATH 5660, MATH 5733. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6131 - Real Analysis (3 Credits)

Every other year. Lebesgue measure and integration, general measure and integration theory, Radon-Nikodym Theorem, Fubini Theorem.

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6330 - Workshop in Statistical Consulting (3 Credits)

Students participate as consultants in a drop-in consulting service operated by the department. Seminars provide students with supervised experience in short term statistical consulting. Note: Since problems vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6360 - Exploratory Data Analysis (3 Credits)

Every other year. Philosophy and techniques associated with exploratory (vs. confirmatory) data analysis, both as originally presented (John Tukey) and current computer-based implementations. Graphical displays, robust-resistant methods (lines, two-way fits), diagnostic plots, standardization. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6376 - Statistical Computing (3 Credits)

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 7376. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6380 - Stochastic Processes (3 Credits)

Every other year. Markov processes in discrete and continuous time, renewal theory, martingales, Brownian motion, branching processes, and stationary processes. Applications include queuing theory, performance evaluation of computer and communication systems and finance. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200), along with undergraduate-level coursework in probability (e.g. MATH 4810). Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6384 - Spatial Data Analysis (3 Credits)

This course will cover various statistical methods for spatial data. This will include assessing cluster identification for point process and regional data, as well as quantifying spatial dependence and making predictions for regional and geostatistical spatial data. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6388 - Statistical and Machine Learning (3 Credits)

This course covers a variety of statistical and machine learning methods. Both supervised and unsupervised methods are covered with an emphasis on model training and error estimation. Topics include penalized regression, principal components, k-nearest neighbors, clustering, and neural networks. Additional higher-level topics such as random forests, support vector machines, and boosting are also covered as time permits. Students will gain exposure to high performance computing by working on a Linux cluster. Prereq: Graduate standing in Statistics or Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Term offered: fall of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6395 - Multivariate Methods (3 Credits)

Every other year. Multivariate distributions, hypothesis testing and estimation. Multivariate analysis of variance, discriminant analysis, multidimensional scaling, factor analysis, principal components. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of graduate-level coursework in regression analysis (e.g. MATH 5387). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 6398 - Calculus of Variations and Optimal Control (3 Credits)

Infrequent. Standard variational problems (geodesic, time-of-transit, isoperimetric, surface, area), Euler-Lagrange equations, variational principles in mechanics, optimal control problems, necessary conditions for optimality, Pontryagin principle. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis or advanced calculus (e.g. MATH 4310 and 4320) or introductory graduate-level coursework in analysis (e.g. MATH 5070). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6404 - Applied Graph Theory (3 Credits)

Every other year. Emphasis on graph theory. Topics will include trees, diagraphs and networks, intersection graphs, coloring, clique coverings, distance, paths and cycles. Topics are motivated by applications.

Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6595 - Nonlinear Programming (3 Credits)

Every other year. Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate direction methods; line search and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester course in undergraduate analysis (e.g. MATH 4310 and 4320) and graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6653 - Introduction to Finite Element Methods (3 Credits)

Every other year. The Finite Element Method (FEM) is introduced as a generic tool for the approximation of partial differential equations that model engineering and physics problems of interest. Elliptic, hyperbolic, and parabolic equations are solved with FEM. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6735 - Continuum Mechanics (3 Credits)

Every other year. Indicial notation. Eulerian and Lagrangian coordinates. Deformation, strain, strain rate, stress. Conservation of mass, momentum, and energy. Exploitation of entropy production inequality to obtain constitutive equations for elastic, viscous, visco elastic, plastic, or porous materials. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and ordinary differential equations (e.g. MATH 3200). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 6840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: Graduate standing in Applied Mathematics

MATH 6960 - Research Methods in Mathematics and Statistics (3 Credits)

The goal of the course is to guide students through the process of performing rigorous mathematical and statistical research. Topics include performing a proper literature review, developing technical writing skills, and learning best practices regarding oral presentations. Students will discuss their ongoing research projects in groups and individually with the instructor, write a research paper, and present their results in a classroom seminar. Master's students should be entering their final year of coursework. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permissions. No co-credit with MATH 5950, MATH 5960, or ECON 6073. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7101 - Topology (3 Credits)

Every other year. Topological spaces, compactness, separation properties and connectedness. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of a two semester undergraduate sequence in analysis or advanced calculus (e.g. MATH 4310 and 4320) or a graduate-level course in analysis (e.g. MATH 5070). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7132 - Functional Analysis (3 Credits)

Every other year. Linear metric and topological spaces, duality, weak topology, spaces of functions, linear operators, compact operators, elements of spectral theory, and operator calculus. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate level coursework in real analysis (e.g. MATH 6131). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7376 - Statistical Computing (3 Credits)

Computationally-intensive methods in statistics, including random number generation and Monte Carlo methods, data partitioning and re-sampling, numerical and graphical methods, nonparametric function estimation, statistical models and data mining methodology, analysis of large data sets. Note: This course assumes that students have prior coursework in statistics (e.g. MATH 4820 or 4830 or 3382) and regression analysis (e.g. MATH 4387). Cross-listed with MATH 6376. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Cross-listed with MATH 6376. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7381 - Mathematical Statistics I (3 Credits)

Every other year. Mathematical theory of statistics. Parametric inference: discrete and continuous distributions, methods of parameter estimation, confidence intervals. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of undergraduate-level coursework in linear algebra (e.g. MATH 3191) and statistics (MATH 5320). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7382 - Mathematical Statistics II (3 Credits)

Every other year. (Continuation of MATH 7381.) Hypothesis testing, robust estimation, tolerance intervals, nonparametric inference, sequential methods. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: This course assumes that students have the equivalent of advanced graduate level coursework in mathematical statistics (e.g. MATH 7381). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7384 - Mathematical Probability (3 Credits)

Every other year. Measurable spaces, probability measures, random variables, conditional expectations and martingales. Convergence in probability, almost sure convergence, convergence in distribution, limit theorems (law of large numbers, central limit theorem, laws of iterated logarithm). Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate-level coursework in probability (e.g. MATH 4810) and graduate-level coursework in analysis (e.g. MATH 5070 or 6131). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7385 - Stochastic Differential Equations (3 Credits)

Brownian motion, Ito integral, Ito formula, Dynkin's formula, stochastic optimal control, boundary value problems, Girsanov theorem, mathematical finance, optimal stopping. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in mathematical probability (e.g. MATH 7384). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7386 - Monte Carlo Methods (3 Credits)

This course introduces Monte Carlo integration, variance reduction methods, quasi-Monte Carlo, Markov chain Monte Carlo, Metropolis-Hastings algorithm, Gibbs sampler, simulated annealing, expectation-maximization algorithm, sequential Monte Carlo methods. Prereq: Graduate standing in Applied Mathematics or Statistics. AMENMS/PHD/STAT-MS. Recommended preparation: MATH 5310 and MATH 5320. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7393 - Bayesian Statistics (3 Credits)

Prior and posterior distributions, conjugate models, single and multiparameter models, hierarchical models, numerical methods for evaluating posteriors, Monte Carlo methods, and Markov chain Monte Carlo. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Programming experience is strongly recommended. Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7397 - Nonparametric Statistics (3 Credits)

Every three years. Statistical inference without strong model assumptions. Hypothesis testing and estimation using permutations and ranks, analysis of variance, and nonparametric model fitting. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7405 - Advanced Graph Theory (3 Credits)

Continuation of MATH 6404. Topics to be covered include: trees and optimization, encoding and embedding of graphs, generalized colorings and applications, perfect graphs, extremal problems, substructures, connectedness and cycles. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in graph theory (e.g. MATH 6404). Term offered: spring of even years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7409 - Applied Combinatorics (3 Credits)

Every other year. Emphasis is on enumerative combinatorics. Topics include multinomial coefficients, generating functions, SDRs, Polya's enumeration theory, pigeon-hole principle, inclusion/exclusion and Moebius inversion of finite posets. Topics may also include introduction to designs and finite geometry. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7410 - Combinatorial Structures (3 Credits)

Every other year. Finite combinatorial structures; existence, construction and applications. Topics include Latin squares, Hadamard matrices, block designs, finite geometries and extremal and non-constructive combinatorics. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in combinatorics (e.g. MATH 7409). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7413 - Modern Algebra I (3 Credits)

Every other year. Groups, rings and ideals, integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of undergraduate level coursework in abstract algebra (e.g. MATH 4140). It is recommended that students take MATH 5718 during the same semester as MATH 7413. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7414 - Modern Algebra II (3 Credits)

Every other year. Field theory, Galois theory, Modules over rings, especially over integral domains. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and abstract algebra (e.g. MATH 7413). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7419 - Mathematical Coding Theory (3 Credits)

Error correcting codes are used to recapture information that has been distorted in some transmission process. Various coding schemes use block codes obtained from algebraic, geometric and combinatorial structures. Topics include: fundamentals, linear, Reed-Muller, Golay, cyclic and BCH codes. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7421 - Projective Geometry (3 Credits)

Every other year. Synthetic and algebraic development of projective spaces. Collineation groups, representation theorems, quadratic sets and applications. Emphasis is on finite projective spaces. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718) and combinatorics (e.g. MATH 7409). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7593 - Advanced Linear Programming (3 Credits)

Every three years. A Ph.D. level course that goes deeper into linear programming, starting from where a graduate-level course (5593) ends. Topics include advanced sensitivity analysis, sparse matrix techniques, and special structures. Additional topics, which vary, include deeper analysis of algorithms, principles of model formulation and solution analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7594 - Integer Programming (3 Credits)

Every three years. A Ph.D. level course that uses linear programming (5593), especially polyhedral theory, to introduce concepts of valid inequalities and superadditivity. Early group-theoretic methods by Gomory and Chvatal's rounding function are put into modern context, including their role in algorithm design and analysis. Duality theory and relaxation methods are presented for general foundation and analyzed for particular problem classes. Among the special problems considered are knapsack, covering, partitioning, packing, fix-charge, traveling salesman, generalized assignment matchings. Matroids are introduced and some greedy algorithms are analyzed. Additional topics, which vary, include representability theory, heuristic search and complexity analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear programming (e.g. MATH 5593). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7595 - Advanced Nonlinear Programming (3 Credits)

Every three years. Focuses primarily on the fundamental theory of nonlinear programming. Topics include convex analysis, optimality criteria, Lagrangian and conjugate duality, stability and sensitivity analysis. Other topics vary depending on the research interests of the instructor. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework addressing computational methods in nonlinear programming (e.g. MATH 6595). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7663 - Finite Difference Methods for Partial Differential Equations (3 Credits)

Every other year. Consistency, stability, and convergence for difference schemes. Derivations based on Taylor series and finite series. Methods for parabolic and hyperbolic initial value problems and initial-boundary-value problems, elliptic boundary-value problems, some nonlinear problems. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5070) and partial differential equations (e.g. MATH 5733). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7665 - Numerical Linear Algebra (3 Credits)

Every other year. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7667 - Introduction to Approximation Theory (3 Credits)

Every other year. Linear normed and Banach spaces, convexity, existence and uniqueness of best approximations, least square approximation and orthogonal polynomials, Chebyshev approximation by polynomials and other related families, splines. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in analysis (e.g. MATH 5070) and linear algebra (e.g. MATH 5718). Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 7821 - Topics in Projective Geometry (3 Credits)

Infrequent. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in projective geometry (e.g. MATH 7821). Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7822 - Topics in Linear Algebra (3 Credits)

Infrequent. Topics may include canonical forms, bilinear and quadratic forms, and combinatorial matrix theory. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in linear algebra (e.g. MATH 5718). Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7823 - Topics in Discrete Math (3 Credits)

Infrequent. Advanced topics in discrete mathematics; will change from semester to semester. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7824 - Topics in Computational Mathematics (3 Credits)

Infrequent. Topics include methods for differential equations, numerical optimization, approximation theory, inverse problems, and Fourier analysis. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7825 - Topics in Optimization (3 Credits)

Infrequent. Some topics are extensions of those introduced in MATH 6595, while other topics are new. Examples of topics are: duality, stability, sensitivity, consistency, redundancy, principles of optimality, control theory, calculus of various global (non-convex) optimization and model reformulation. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7826 - Topics in Probability and Statistics (3 Credits)

Infrequent. Topics may include generalized linear models, information theory, robust methods, spatial statistics, sequential analysis, Monte Carlo methods, queueing theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or Statistics or instructor permission. AMEN-MS/PHD/STAT-MS. Note: Students should contact the course instructor to determine the course focus, and to determine if any prior undergraduate- or graduate-level coursework is assumed. Repeatable. Max hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics or Statistics. AMEN-MS/PHD/STAT-MS

MATH 7827 - Topics in Applied Mathematics (3 Credits)

Infrequent. Topics include problems in differential equations, optimization, mathematical modeling, Fourier analysis and approximation theory. Note: Since topics vary each semester, students may register for this course more than once. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Repeatable. Max Hours: 48 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 48.

Prereq: Graduate standing in Applied Mathematics

MATH 7840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: Graduate standing in Applied Mathematics

MATH 7921 - Readings in Mathematics (1 Credit)

Annual. Seven readings courses are offered regularly primarily for Ph.D. students at the research level in the designated fields. The seminar format requires significant student participation. Prereq: permission of instructor. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7922 - Rdgs:Math Fndts-Cmptr Sc (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7923 - Readings: Discrete Mathematics (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7924 - Rdgs:Comp Mathematics (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7925 - Readings: Optimization (1 Credit)

Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

MATH 7926 - Rdgs:Applied Prob/Stats (1 Credit)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing in Applied Mathematics or Statistics and instructor permission. Repeatable. Max Hours: 99 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 99.

Prereq: Graduate standing in Applied Mathematics

MATH 7927 - Rdgs:Comp/Math Biology (1 Credit)

Max hours: 1 Credits.

Grading Basis: Letter Grade

MATH 8660 - Mathematical Foundations of Finite Element Methods (3 Credits)

Every other year. Theoretical foundations of finite element methods for elliptic boundary value problems, Sobolev spaces, interpolations of Sobolev spaces, variational formulation of elliptic boundary-value problems, basic error, estimates, applications to elasticity, practical aspects of finite element methods. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in finite element methods (e.g. MATH 6653) or equivalent programming experience, and graduate-level coursework in analysis or functional analysis (e.g. MATH 6131 or MATH 7132). Term offered: spring of odd years. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 8664 - Iterative Methods in Numerical Linear Algebra (3 Credits)
Every other year. Preconditioned iterative methods for linear systems and eigen problems, conjugate gradients, multigrid and domain decomposition. Prereq: Graduate standing in Applied Mathematics or permission of the instructor. Note: This course assumes that students have the equivalent of graduate-level coursework in numerical analysis (e.g. MATH 5660) and numerical linear algebra (e.g. MATH 7665). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing in Applied Mathematics

MATH 8990 - Doctoral Dissertation (1-10 Credits)
Only for students working on their Ph.D. research. Repeatable. Max hours: 50 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 50.

Additional Information: Report as Full Time.

Maximizing Access to Research Careers (MARC)

MARC 5780 - Behavioral & Biomedical Sciences Research: Ethics & Issues (3 Credits)

Students will critically review and analyze some of the major ethical and policy issues that arise during the conduct of basic and applied behavioral research. Prereq: PSYC 1000, 1005, 2090, 2220 and 3090 or Graduate standing or instructor permission. Term offered: fall. Cross-listed with PSYC 4780, PSYC 5780 and MARC 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000, 1005, 2090, 2220 and 3090 or Graduate standing or instructor permission

MARC 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Mechanical Engineering (MECH)

MECH 5001 - Seminar: Introduction to Research (1 Credit)

This course is intended to introduce graduate students to the fundamental skills and methods needed to perform research. Topics include writing technical papers, presentation skills, testing methodology, hypothesis creation and more. Max Hours: 1 Credit.

Grading Basis: Letter Grade

MECH 5020 - Biomechanics (3 Credits)

Static and dynamic biomechanical analysis, effects of mechanical loading on bone and cartilage, design considerations in orthopaedic devices, muscle function, biomechanics of human movement, cardiovascular biomechanics. Graduate standing or permission of the instructor required. Cross-listed with MECH 4020. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

Typically Offered: Summer.

MECH 5024 - Mechanical Behavior of Materials (3 Credits)

Students will learn about the mechanical behavior of materials using a multi-scale, materials oriented approach. The course will relate how atomistic and molecular mechanisms relate to macroscopic and continuum properties of materials across acute and long-term time scales. Graduate standing or permission of the instructor required. Cross-listed with MECH 4024. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

Typically Offered: Fall.

MECH 5025 - Advanced Biomechanics (3 Credits)

This course provides training in computational and experimental methods for biomechanical engineering analysis. Topics include finite element analysis of biological systems, orthopedic device design, medical imaging analysis, mechanical characterization of biological tissues, and biomechanics of human movement. Prereq: MECH 4020 or MECH 5020. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 4020 or MECH 5020

MECH 5110 - Numerical Methods for Engineers (3 Credits)

Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4110. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5112 - Introduction to Internal Combustion Engines (3 Credits)

This course provides an introduction to the major characteristics of internal combustion engines and defines the major parameters used to describe the engine operation and design conditions. Students perform analysis of the thermal performance of the engines. Graduate standing or permission of the instructor required. Cross-listed with MECH 4112. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5114 - Designing with Composites (3 Credits)

Analysis and design of polymers and polymer-based composites. Failure criteria include static strength, stiffness, creep, fatigue, impact and fracture toughness. Design criteria include strength-to-weight ratio and cost-to-strength ratio. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4114. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5115 - Applied Plasticity and Creep (3 Credits)

Plastic deformation of materials applied to bulk and sheet metal manufacturing processes such as extrusion, rolling and sheet metal. Linear and nonlinear viscoelastic creep with applications to plates and shells. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4115. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5120 - Methods of Engineering Analysis (3 Credits)

Selected topics from real analyses with applications to engineering analyses. Topics include vector calculus, ordinary differential equations, partial differential equations and calculus of variations. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4120. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5121 - Introduction to Fluid Dynamics (3 Credits)

Physical properties of gases and liquids; kinematics of flow fields; equations describing viscous, heat-conducting Newtonian fluids. Exact solutions and rational approximations for low- and high-speed dissipative flows, surface and internal waves, acoustics, stability, and potential flows. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5122 - Macroscopic Thermodynamics (3 Credits)

Axiomatic presentation of fundamentals of classical thermodynamics (first law); energy, work and heat. Equilibrium, reversible, and irreversible processes; entropy production and the second law. Applications to stability and phase equilibrium. Irreversible thermodynamics and the Onsager reciprocal relations. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5123 - Introduction to Continuum Mechanics (3 Credits)

Cartesian tensor notation. Deformation, strain, strain rate and compatibility. Definition of stress vector and tensor. Fundamental balance laws of mass, momentum and energy; entropy production inequality. Constitutive equations for elastic, viscoelastic and plastic materials; ideal, compressible, and viscous fluids. Beltrami-Mitchell and Navier-Stokes equations. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5124 - Yield-Limited Behavior of Materials (3 Credits)

Analysis of material behavior within the "elastic range," with emphasis on the phenomenon of yield and factors that influence it. Examination of the theory of dislocations; study of strengthening mechanisms in solids. Consideration of various time-dependent but reversible (inelastic) deformation phenomena. Presentation of appropriate engineering case studies to augment various topics. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a grade of B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5133 - Theory of Inelastic Materials (3 Credits)

Mathematical theory of linear viscoelasticity. Finite elements models. Solution of boundary-value problems in linear viscoelasticity. Non-Newtonian flow. Selected topics in nonlinear material behavior. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5141 - Viscous Flow (3 Credits)

Viscous incompressible fluid flows. Topics include derivation of equations governing viscous compressible fluid motion; specializations to simple flows; boundary-layer theory; similarity solutions; introduction to turbulence and Reynolds stresses. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4141. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5142 - Statistical Thermodynamics (3 Credits)

Introduces the molecular interpretation and calculation of thermodynamic properties of matter, thermodynamic probability, distribution functions, Schrodinger wave equations and solutions and ensemble theory. Applications to ideal and real gases, solids, liquids, radiation, conduction electrons, and chemical equilibrium. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5143 - Theory of Elasticity (3 Credits)

Review of the basic equations of linear theory of elasticity. St. Venant torsion and flexure. Plane strain, plane stress, and generalized plane stress. Application of conformal mapping and Fourier transform techniques. Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5144 - Plasticity and Creep (3 Credits)

Inelastic deformation of materials such as metals, alloys, glasses, composites and polymers from the phenomenological and structural point of view. Case studies of plastic and creep deformations in engineering materials. Prereq: MECH 5143 with a grade of B- or higher and graduate standing or permission of the instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5161 - Compressible Flow (3 Credits)

Energy, continuity, and momentum principles applied to compressible flow; one-, two-, and three-dimensional subsonic, supersonic and hypersonic flows. Normal and oblique shocks, and method of characteristics. Prereq: MECH 5141 with a grade of B- or higher and graduate standing or permission of the instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5141 with a B- or higher Restriction: Restricted to graduate standing or higher

MECH 5162 - Heat Transfer I (3 Credits)

Review of equations governing transport of heat by conduction and radiation. Analytical and numerical solution of boundary value problems representative of heat conduction in solids. Radiation properties of solids, liquids and gases; transport of heat by radiation. Prereq: Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5163 - Dynamics (3 Credits)

Review of Newtonian dynamics, Lagrange's equation for particles, systems and rigid bodies. Conservative and non-conservative systems, moments of inertia, principal axes, angular momentum and Euler equations. Illustrations from spinning bodies, including tops, gyro-compass and rotating machinery. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4163. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5166 - Computerized Numerical Control (CNC) Manufacturing (3 Credits)

Modern manufacturing engineering concepts using computerized numerical control (CNC). The students learn state-of-the-art CNC methodologies, including digitizing, drawing, generating codes, and manufacturing using modern CNC machines. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4166. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5172 - Heat Transfer II (3 Credits)

Review of equations governing transport of heat in fluids in motion. Description of heat transfer in free and forced convection, including laminar and turbulent flow. Dimensional analysis and heat transfer correlations, numerical methods and combined heat transfer mechanisms. Graduate standing or permission of the instructor required. Prereq: MECH 5141 with a B- or higher. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5141 with a B- or higher Restriction: Restricted to graduate standing or higher

MECH 5175 - Finite Element Stress Analysis (3 Credits)

Students learn basic theory of finite element analysis (FEA) as it applies to stress analysis and design of mechanical components. Commercial package will be used giving students practical experience in the use of FEA. Graduate standing or permission of the instructor required. Prereq: MECH 5143 with a B- or higher. Cross-listed with MECH 4175. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MECH 5143 with a grade of B- or higher Restriction: Restricted to graduate standing or higher

MECH 5176 - Introduction to Sports Engineering (3 Credits)

Sports Engineering requires working both with the principles of biomechanics and the principles of engineering design and analysis. Using biomechanics is necessary in understanding the forces on the interface between the human athlete and his/her equipment. Prereq: Graduate standing or permission of the instructor required. Cross-listed with MECH 4176. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5177 - Energy Conversion (3 Credits)

This introductory Energy Conversion course introduces the basic background, terminology, and fundamentals of various forms of energy conversion. The topics covered will include: fuel cells, batteries, photovoltaic systems, solar thermal, and wind energy. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4177. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5178 - Solar Engineering (3 Credits)

This course provides the student with the basic ideas and calculation procedures on how solar processes work and how their performance can be predicted. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4178. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5179 - Introduction to Turbomachinery (3 Credits)

This introductory Turbomachinery course introduces the basic background, terminology, and fundamentals of various forms of turbomachines. The analysis of the various turbomachines will be focused on the performance of the turbomachine. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4179. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students

MECH 5180 - Advanced Heat Transfer (3 Credits)

This course provides fundamental concepts and applicable mathematical techniques for understanding the physics of various modes of heat transfer. Topics include heat conduction in finite and semi-infinite domains, phase change, microscale heat conduction, laminar forced and free convection, turbulence forced and free convection, and thermal radiation. Prereq: Graduate standing or permission of instructor required. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

MECH 5182 - Microscale Transport Phenomena (3 Credits)

This course provides the foundations on the physics of microscale transport phenomena, where continuum effects break down, with applications in MEMS and NEMS. Topics include gas microflows, liquid microflows, surface tension-driven flows, electrokinetics transport, kinetic theory, simulation techniques, lattice Boltzmann methods. Restriction: Restricted to graduate students in the College of Engineering, Design and Computing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate standing majors in the College of Engineering, Design and Computing

MECH 5208 - Special Topics (1-3 Credits)

Subject matter to be selected from topics of current technological interest. Credit to be arranged. Prereq: Graduate standing or permission of instructor required. Cross-listed with MECH 4208. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate students

MECH 5228 - Special Topics (1-3 Credits)

Prereq: MECH 3032 (Electric Systems-Circuits Lab). Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Prereq: MECH 3032.

MECH 5238 - Special Topics (1-3 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate students

MECH 5840 - Independent Study (1-3 Credits)

Available only through approval of the graduate advisor. Subjects arranged to fit needs of the particular student. Graduate standing or permission of the instructor required. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to graduate students

MECH 5939 - Internship (3 Credits)

Students gain engineering design experience involving application of specific technical concepts and skills in a supervised industrial environment. (Must have approval from MECH faculty.) Max Hours: 3 Credits.
Grading Basis: Letter Grade

MECH 5950 - Master's Thesis (1-6 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Restriction: Restricted to graduate students
Additional Information: Report as Full Time.

MECH 5960 - Master's Report (3 Credits)

Master of Science in Engineering report. Students seeking the Master of Science in Engineering, and who do not choose to do a thesis, must complete an individual project of an investigative and creative nature under the supervision of a member of the graduate faculty. Graduate standing or permission of the instructor required. Repeatable. Max hours: 6 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 6.
Restriction: Restricted to graduate students
Additional Information: Report as Full Time.

MECH 5970 - Graduate Problem Course (3 Credits)

The graduate problem course is for the solution of specific problems in MECH specialty areas. Each student is assigned a set of problems of some difficulty requiring the use of the literature of the various areas covered. Prereq: 15 hours of graduate level courses in MECH. Max Hours: 3 Credits.
Grading Basis: Letter Grade

MECH 6184 - Advanced Fluid Mechanics (3 Credits)

This course provides a description of the advanced concepts for understanding the physics of fluid motion under different regimes. Topics include kinematics, stresses, equation of motion, vorticity transport, low Reynolds number flow, irrotational flow, interfacial flow, acoustics&waves, hydrodynamic stability & transition, turbulent flow. Prereq: MECH 5141. Restriction: Restricted to students with graduate standing, or permission of instructor. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: MECH 5141. Restriction: Restricted to students with graduate standing.

MECH 8990 - Doctoral Dissertation (1-10 Credits)

Graduate standing or permission of the instructor required. Repeatable. Max hours: 10 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 10.
Restriction: Restricted to graduate students
Additional Information: Report as Full Time.
Typically Offered: Fall, Spring.

Media Forensics (MSMF)

MSMF 5000 - Experiential Lab (1 Credit)

Students will understand laboratory procedures and the application of A/V technology in the field and in analysis through professional conferences and site visits to crime labs and government agencies. Students will respond to experiences regarding presentation, demonstration, and discussion components. Restriction: Restricted to MFOR-MS students. Repeatable. Max hours: 5 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 5.
Restriction: Restricted to MFOR-MS students.

MSMF 5050 - Topics in Media Forensics (1-3 Credits)

Students learn theory and application through topical subjects designed to enhance theoretical and practical training in the analysis of forensic media. Emphasis will be placed on emerging technologies, methodological developments, and strengthening fundamental skills. These courses are repeatable for credit. Repeatable. Max hours: 5 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 5.

MSMF 5100 - Forensic Science and Litigation (3 Credits)

Critical analysis of legal precedent and court proceedings reveal to students the correlation between science and law in the litigation of forensic evidence. Assigned reading and research papers regarding evidence admissibility and scientific methodology will prepare students for evidence examination. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to MFOR-MS students.
Typically Offered: Fall.

MSMF 5150 - Research Practices in Media Forensics (3 Credits)

An introduction to practical research techniques and forensic science periodicals provides students with a foundation for projects and reports in subsequent classes and for the research thesis. Library resources, research design, writing styles, and information technology will be discussed. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to MFOR-MS students.
Typically Offered: Fall.

MSMF 5200 - Foundations in Media Forensics (3 Credits)

Students learn the foundational processes integral to forensic audio, video, and image analysis demonstrating knowledge through reading responses and documentation of procedures and methodology used in assigned projects. Topics include: media recording technology, analog/digital theory, multimedia compression, and equipment characterization. Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students.
Typically Offered: Spring.

MSMF 5250 - MATLAB Foundations (2 Credits)

An introduction to MATLAB workflow and its use in Media Forensics will be explored. Students will learn how to build program commands in scripts for signal analysis and to display graphical representations of data and statistics. Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 2 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5100 and 5150 with a B- or higher. Restriction: Restricted to MFOR-MS students.

Typically Offered: Spring.

MSMF 5300 - Computer Forensics (3 Credits)

Students explore computer forensics through guided projects and group discussion. An overview of computer hardware/software and characterization of storage media and file types will be covered through mock evidence examination documenting the search, seizure, and acquisition of forensic media. Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 5350 - Mobile Phone Forensics (1 Credit)

Students learn concepts regarding the proper handling of mobile phones to ensure evidence integrity and approaches to address the ever-changing field. Students are prepared for the acquisition and analysis of forensic media on personal devices through exercises and group projects. Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq: MSMF 5200 and MSMF 5250 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 5400 - Forensic Audio Analysis (3 Credits)

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5450. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5450. Restriction: Restricted to MFOR-MS students.

Typically Offered: Fall.

MSMF 5450 - MATLAB for Forensic Audio Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5400. Restriction: Restricted to MFOR-MS students. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq: MSMF 5300 and 5350 with a B- or higher. Coreq: MSMF 5400. Restriction: Restricted to MFOR-MS students.

Typically Offered: Fall.

MSMF 5500 - Forensic Video and Image Analysis (3 Credits)

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5550. Restriction: Restricted to MFOR-MS. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5550. Restriction: Restricted to MFOR-MS.

Typically Offered: Spring.

MSMF 5550 - MATLAB for Forensic Video and Image Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response Non-Uniformity and the BI-Dimensional DFT, students are prepared for image authenticity examinations. Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5500. Restriction: Restricted to MFOR-MS. Max hours: 1 Credit.

Grading Basis: Letter Grade

Prereq: MSMF 5400 and 5450 with a B- or higher. Coreq: MSMF 5500. Restriction: Restricted to MFOR-MS.

Typically Offered: Spring.

MSMF 5600 - Report Writing and Court Testimony (3 Credits)

Students are prepared for expert witness testimony through the analysis of mock evidence, complimentary report preparation, and subsequent mock trial. This capstone experience will demonstrate a student's technical writing and presentation skills and exercise the creation of demonstrative materials. Prereq: MSMF 5500 and 5550 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSMF 5500 and 5550 with a B- or higher. Restriction: Restricted to MFOR-MS students.

MSMF 6900 - Research Thesis in Media Forensics (4 Credits)

Students work closely with their thesis advisor in selecting a topic for original research and scientific publication. This capstone project creates an area of specialty for degree candidates. Approved materials are evaluated through report submission and thesis defense. Prereq: MSMF 5600 with a B- or higher. Restriction: Restricted to MFOR-MS students. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Prereq: MSMF 5600 with a B- or higher. Restriction: Restricted to MFOR-MS students.

Modern Languages (MLNG)

MLNG 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. Note: This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, SPAN 4690, SPAN 5690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

MLNG 5691 - Methods of Teaching Modern Languages II (3 Credits)
 A continuation of the study of modern language teaching methods. This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, SPAN 4691, SPAN 5691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690
 Typically Offered: Spring.

Philosophy (PHIL)

PHIL 5002 - Ancient Greek Philosophy (3 Credits)
 History of ancient Greek thought, including traditional myth, pre-Socratic fragments, Plato's dialogues, and Aristotle's systematic philosophy. Cross-listed with PHIL 3002. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5013 - Methods and Practices of Graduate Interdisciplinary Humanities (3 Credits)
 The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN/SSCI 5013. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5022 - Modern Philosophy (3 Credits)
 History of philosophy from Descartes through Kant. Cross-listed with PHIL 3022. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA) Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5040 - Skepticism (3 Credits)
 Considers radical skepticism in the form of Sextus Empiricus' Outlines of Pyrrhonism. Following Peter Suber's "Essay on Classical Skepticism," the course also looks at historical responses to Pyrrhonian skepticism, especially in theories of belief. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4040. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5101 - Pragmatism: Classical American Philosophy (3 Credits)
 The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead and Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4101, SSCI 5101, HUMN 5101. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5200 - Social and Political Philosophy (3 Credits)
 Examines basic issues in social and political philosophy, including justice, freedom, individuality, power and community. Cross-listed with PHIL 3200. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5220 - Aesthetics and the Philosophy of Art (3 Credits)
 Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics and the philosophy of art, including topics such as: the nature of art, interpretation and evaluation in art. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4220 and HUMN 5220. Max hours: 3 Credits.
 Grading Basis: Letter Grade
 Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5242 - Bioethics (3 Credits)

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as lifesaving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4242, HUMN 5242, SSCI 5242. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5260 - Philosophy of Law (3 Credits)

Surveys theoretical positions on the nature of law, with particular emphasis on American law. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4260. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5300 - Philosophy of Mind (3 Credits)

Consideration of the problems in the philosophy of mind, such as the mind-body problem, the problem of our knowledge of other minds, the compatibility of free will and determinism, and discussion of such concepts as action, intention, motive, desire, enjoyment, memory, imagination, dreaming and self-knowledge. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5308 - Contemporary Feminist Thought (3 Credits)

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, WGST 4308, WGST 5308. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5350 - Philosophy of Science (3 Credits)

This course examines some of the central philosophical questions concerning the nature of scientific investigation, such as the logical relation of evidence to hypothesis, the objective adjudication of competing hypotheses, the logical function of modeling in empirical inquiry, the criterion for a classificatory system to underwrite induction and explanation, the explanatory relationships between the differing sciences, as well as the theoretical and pragmatic function of scientific law and its relationship to explanation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5430 - Environmental Ethics (3 Credits)

While human industry/technology creates enormous material prosperity, it can result in devastating environmental damage. This course analyzes the moral values, consequences and duties implied in relationships between human beings, animals and ecological systems, while seeking out new and ethical approaches. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 3430, HUMN 5430 and SSCI 5430. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5441 - Philosophical Reasoning Skills (3 Credits)

This course provides Philosophy majors and other philosophically interested students with the skills and tools necessary for effectively navigating philosophical discussions. In this course we will cover issues such as validity and soundness, as well as several systems useful for demonstrating validity. The course will in addition address important issues in the philosophy of language, including the very important question of definitions, as well as the use of thought experiments and avoidance of informal fallacies. Finally, since philosophical reasoning increasingly involves knowledge of the methods of scientific reasoning, those skills will also be included in the course. Cross-listed with PHIL 3441. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

Typically Offered: Spring.

PHIL 5450 - Punishment and Social Justice (3 Credits)

We will use the critical tools of philosophy to think about how contemporary practices of punishment are justified, how they shape the world we live in and what alternative normative frameworks might be. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 5450. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5480 - Perspectives on Good and Evil (3 Credits)

Examines "problem of evil" as formulated in the philosophical tradition. Presents classical formulation of the problem, traditional solutions & classical critiques of each answer. Considers perspectives of various religious orientations, which deal differently with the question of suffering. Restriction: Restricted to students with Graduate standing. Cross-listed with PHIL 4480, RLST 4480/5480. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PHIL 5500 - Feminist Philosophy (3 Credits)

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Crosslisted with PHIL 4500, WGST 4500 & 5500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5600 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with HUMN 5600, PHIL 4600, RLST 4060, 5060, and SSCI 5600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5655 - Differing Concepts of God (3 Credits)

God, Gods, and Goddesses have been imagined in many different modes, forms, aspects, and guises throughout human history. This course investigates Paleolithic models of God, the Great Goddess of the Neolithic era, the Gods of mythological traditions, Biblical God, the abstract God of the philosophers, the God of the pantheists, the deists, and the God of the mystics. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4650, RLST 4400 and 5400. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5730 - Philosophy and Literature (3 Credits)

Considers the philosophical dimensions of literature. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4730, ENGL 4735 and 5735. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5750 - Introduction to Phenomenology (3 Credits)

Examines the contribution of phenomenology to selected topics in the theory of meaning, philosophy of mind, ontology, and epistemology, through a study of such philosophers as Husserl, Heidegger, Sartre and Merleau-Ponty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4750. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5755 - Philosophical Psychology (3 Credits)

Explores debates about psyche and body, mind and world, self and others, and consciousness and nature. Examines the philosophical questions related to those debates that arise within theories of perception, affect and cognition offered by influential psychological models.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4755, HUMN 5750 and SSCI 5750. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5770 - Hegel (3 Credits)

A systematic study of the thought of G.W.F. Hegel through his most important and influential works: *The Phenomenology of Spirit*; *The Encyclopedia of Philosophical Sciences*; *The Science of Logic*; *Lectures on the Philosophy of History*; and his lectures on the history of philosophy, art and religion. Focus of the course varies.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4770. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5780 - Heidegger (3 Credits)

Studies the thought of Martin Heidegger, one of the most important philosophers of the 20th century. Includes texts from both Heidegger's early and later periods, and focuses on his analyses of human subjectivity and being. Prereq: Six credit hours in Western philosophy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5790 - Nietzsche (3 Credits)

A close study of Nietzsche's philosophical writings, with attention to his significance for philosophy in the 20th century and beyond. Cross-listed with PHIL 4790. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

Typically Offered: Spring.

PHIL 5795 - Marx and Marxism (3 Credits)

A close study of the most influential works of Karl Marx and subsequent theorists who provide either an influential interpretation of the works of Marx or contribute to an innovative application or elaboration of the basic tenets of Marxism. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4795. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5800 - Plato (3 Credits)

A careful study of Plato's writings, emphasizing the dialogue form, and discussion of Plato's significance for the history of ethics, political theory, psychology, metaphysics and epistemology. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4800. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5810 - Aristotle (3 Credits)

Examines Aristotle's systematic philosophy and discusses its contributions to logic, epistemology, physics, psychology, metaphysics, ethics and political theory. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4810. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

Typically Offered: Spring.

PHIL 5812 - Special Topics in Philosophy (3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5820 - Hume (3 Credits)

Considers the work of eighteenth century philosopher David Hume. Emphasis on unity of Hume's thought. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4820. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5830 - Kant (3 Credits)

A close study of Immanuel Kant's revolutionary thought, focusing on Kant's ontology, epistemology, and ethical theory, as they are articulated in his Critique of Pure Reason and Critique of Practical Reason.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 3760. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5833 - Existentialism (3 Credits)

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4833, HUMN 5833 and SSCI 5833. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5840 - Independent Study: PHIL (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

PHIL 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PHIL 5900 - John Dewey (3 Credits)

John Dewey was one of the most important of the American philosophers and public intellectuals of the twentieth century. Topics may include Dewey's philosophical naturalism, pragmatist epistemology, process metaphysics and philosophies of experience, aesthetics, religion, technology and democracy. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4900. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5920 - Philosophy of Media and Technology (3 Credits)

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4920, HUMN 5920, SSCI 5920. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

PHIL 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity?

This question will be examined, first by studying Plato's dialogues—such as *Lysis*, *Symposium* and *Republic*—and then by reading texts from Sigmund Freud, Michael Foucault and others. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA). Cross-listed with PHIL 4933, WGST 4933/5933, SSCI 5933 and HUMN 5933. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Bachelors to Masters program (PHIL-BA-BMA)

Physics (PHYS)

PHYS 5351 - Bioelectromagnetism (4 Credits)

The fundamental theory of electric and magnetic fields is developed and applied to problems in biology and medicine. Examples in medical diagnostics and treatment are built upon rigorous application of Maxwell's equations and constitutive models of electromagnetic properties of biomaterials. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4351. Term offered: infrequent. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PHYS 5352 - Bioelectromagnetism NM (4 Credits)

This course is the non-majors' companion to PHYS 4351/5351 (taught simultaneously) using modeling approaches accessible to the general science student. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with PHYS 4352. Term offered: infrequent. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PHYS 5400 - Scientific Instrumentation (3 Credits)

Conceptual and practical knowledge needed to design scientific instruments, develop technical products, and use special laboratory procedures to research. Topics include materials, mechanisms, electronics, and optics. Cross-listed with PHYS 4400. Repeatable. Infrequently Offered. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PHYS 5401 - Special Topics (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

PHYS 5840 - Independent Study: PHYS (1-3 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Typically Offered: Fall, Spring, Summer.

PHYS 5850 - Physics for Design and Innovation I (3 Credits)

A service-learning project using fundamental physical principles to design a prototype scientific instrument, technical device, or technical process for a real-world client. Includes instruction on project management, intellectual property, and market analysis. Cross-listed with PHYS 4850. Repeatable. Term offered: infrequent. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PHYS 5852 - Physics for Design and Innovation II (3 Credits)

A capstone project using fundamental physical principles to prototype a scientific instrument, technical device or technical process. The focus is on the student's own product idea. Includes online guided readings on the wider context of product development. Students should consult with instructor on necessary physics and mathematics preparation for the project. Prereq: PHYS 4850 or 5850. Cross-listed with PHYS 5852. Repeatable. Term offered: infrequent. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PHYS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PHYS 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Note: Students must check with a faculty member before taking this course. Repeatable. Term offered: spring, summer, fall infrequently. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Typically Offered: Fall, Spring, Summer.

PHYS 5950 - Master's Thesis (1-8 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

PHYS 5960 - Master's Project (1-8 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

PHYS 5980 - Advanced Physics Topics (1-3 Credits)

Covers a particular topic as announced in the 'Schedule Planner.' Note: May be taken more than once for credit in different topics. Note: this course assumes that students have completed PHYS 2811 or equivalent. Prereq: Graduate standing. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PHYS 6840 - Independent Study: PHYS (1-3 Credits)

Note: Students must check with a faculty member before taking this course. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Political Science (PSCI)

PSCI 5000 - State of the Discipline (3 Credits)

Introduces graduate study in political science. Provides an overview of theories and methods in the four fields of American politics, political theory, comparative politics and international relations. Guest lectures by department faculty. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall.

PSCI 5008 - Graduate Topics in Political Science (1-3 Credits)

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, spring, summer. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall, Spring, Summer.

PSCI 5009 - Politics of the Budgetary Process (3 Credits)

Explores budgeting and financial management in the public and nonprofit sectors. An overview of public sector and nonprofit fiscal management is provided, along with thorough exploration of the political influences that affect financial decision-making. Note: Offered as a special topics course in an intensive three-weekend format, which is reflected in the syllabus. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5011 - GIS in Political Science (3 Credits)

Computer lab course developing methodological skills in Geographic Information Systems (GIS) in political contexts. Geospatial computerized mapping skills are important in political fields such as urban planning, electoral analysis, environmental justice, demographics, public health, and criminal justice. Designed for beginners. Cross-listed with PSCI 4011. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Spring.

PSCI 5013 - Philosophical Problems in the Social Sciences (3 Credits)

Explores the fundamentals of the conduct of inquiry; concept formation and theory construction in the social sciences; issues related to value judgments and objectivity, social praxis, human nature and political choice. Cross-listed with SSCI 5013. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5014 - Seminar: American Politics (3 Credits)

Foundations of U.S. politics and contemporary political issues. Federal/state/community relations. Relationship among the three branches of the Federal government. Colorado controversies arising under the U.S. Constitution. Cross-listed with PSCI 4094. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5024 - State Politics: Focus on Colorado (3 Credits)

Analysis of unique aspects of Colorado government and politics. Political comparison of Colorado with other states. Preparation and discussion of research papers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Term offered: fall, summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

Typically Offered: Fall, Summer.

PSCI 5025 - Local Governance and Globalization (3 Credits)

Introduces international political economy, consequences of globalization for localities, interplay between wealth and power among nations, multinational corporations, NGOs and the UN, and impact of their actions on local governments. Topics include development, aid, trade, outsourcing, eco-sustainability and global equity. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).. Cross-listed with PSCI 4025. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5044 - The Presidency (3 Credits)

An overview of the historical, constitutional, and functional aspects of the presidency. Focuses on the powers and vulnerabilities of the presidency and on the style and politics of the current president.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4044. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5054 - The Legislative Process (3 Credits)

An intensive examination of the structures and interactions through which laws are made in the United States. The major emphasis is the national level, but considerable attention is devoted to state legislatures and local lawmaking bodies. Impact of money and interest groups.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5057 - Religion and Politics (3 Credits)

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Cross-listed with PSCI 4057, and RLST 4500, 5500. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5075 - Gentrification and Social Equity (3 Credits)

Study causes and consequences of urban gentrification, and explore strategies of grassroots resistance and social equity solutions that are being mobilized to challenge the forces of gentrification. Contrast common celebrations of the waves of capital reinvestment that are fueling urban revitalization with the frequent claim of many low-income neighborhoods: "Gentrification is Class War!" Cross-listed with PSCI 4075. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5084 - Local Government and Administration (3 Credits)

Policy and administrative challenges faced by local government in the 21st Century. Emphasis on cities under federalism, alternative forms of city governance, and new challenges from increasingly diverse constituents. Issues of poverty, public safety, health, transportation, environment, corruption and accountability. Cross-listed with PSCI 4084. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5085 - Comparative Governance: Environment and Society (3 Credits)

Focuses on how public & private actors at various levels of governance address pressing social & environmental issues such as aging societies, drug abuse, air pollution & global warming. Students will learn to analyze the dynamics of conflict & cooperation, using main concepts and theories of governance literature. Cross-list PSCI 4085. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5094 - Seminar: Urban Politics (3 Credits)

An intensive analysis and research of major aspects of politics and government in metropolitan areas. Impact of corporations and higher levels of government on cities. Opportunities for, and barriers to, citizen participation. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5105 - Comparative Politics: Europe (3 Credits)

Examination and writing of research papers on selected topics of industrial democracies, especially those of Europe. Cross-listed with PSCI 4105. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5135 - Seminar: Political Economy of Latin America (3 Credits)

Focuses on the political economies and cultures of Latin America. Particular attention is given to the impact of the export-led growth strategy on social and political development. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5145 - Indigenous Politics (3 Credits)

Surveys the status of the world's native peoples and nations, and the role of law and politics in the future of indigenous peoples in the global arena. Examines questions of human rights, economic development, and international law and politics. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4146 and ETST 4146. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5176 - Gandhi's Legacy: Non-Violent Resistance Today (3 Credits)

This course assesses the legacy of Gandhi's nonviolent struggle against systemic oppression. We examine Gandhi's ideas and practices, consider Western images of political violence, and then focus on questions and possible answers raised by empirical studies. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4176. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5206 - Social Movements, Democracy and Global Politics (3 Credits)

Examines global social movements as new political actors within world politics; how theoretical perspectives in international relations and democracy address these actors; and the forms of interaction among these actors, states, and global governance institutions. Cross-listed with PSCI 4206. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5216 - Seminar: International Relations (3 Credits)

Introduces contending theories, empirical studies, and research methods in the field. Writing and discussion of comprehensive research papers in the field of international power politics and alternative attempts at controlling conflicts among nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5217 - Human Rights in Theory and Practice (3 Credits)

Explores the ideas of human rights and the practical efforts to actualize rights in society. Students study the theories of rights and the evolution of rights in history, as well as work with a service organization. Cross-listed with PSCI 4217. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5224 - Dictatorships in 21st Century (3 Credits)

Analyzes and classifies political systems of non-democratic regimes. Reviews earlier and contemporary theories that explain the origins, survival and death of authoritarian regimes. Discusses the impact of dictatorial rule on domestic developments as well as on international relations. Cross-listed with PSCI 4224. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5225 - Democracy and Democratization (3 Credits)

Examines the conditions under which countries turn from authoritarianism towards democracy and become stable democratic regimes. Also examines the impact of foreign and international factors on new democracies. Cross-listed with PSCI 4225. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5236 - Seminar: American Foreign Policy (3 Credits)

Examines selected methodological and substantive problems. Particular emphasis on elements of national decision making, America's adaptation to the changing world, and opportunities for student contributions through research and discussion. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5238 - Seminar: Comparative Foreign Policy (3 Credits)

Examination of the effects of leaders, groups, institutions, strategic cultures and external influences on national foreign policy-making processes and comparative analysis of foreign policy making of great and emerging powers. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5245 - Gender, Globalization and Development (3 Credits)

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with PSCI 4248 and WGST 4248/5248. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5256 - Seminar: National Question and Self-Determination (3 Credits)

Designed to provide students with a broad theoretical and empirical understanding of the causes of ethnic conflicts and to assess different strategies of conflict resolution. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5265 - Social Justice And Globalization (3 Credits)

Examines issues of justice and ethical responsibility in a globalizing world. Do moral obligations of individuals and institutions end at national borders or do they encompass all human beings and extend to the environment and to future generations? Cross-listed with PSCI 4265. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5266 - International Law (3 Credits)

Investigates the body of law that regulates relations between nations and provides a framework for solving common problems and disputes between nations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4266. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5274 - Conflict Resolution and Public Consent Building (3 Credits)

Alternative strategies for resolving or mediating conflicts facing public or nonprofit organizations and for building public consent, with emphasis on personal, interpersonal, organizational, interest-group, cross-cultural, and roots of conflict and bases for consent. Cross-listed with PSCI 4274. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5276 - Conflicts and Rights in International Law (3 Credits)

Explores contending interpretations and practices in international law regarding issues such as the legitimacy of humanitarian intervention, efficacy of truth commissions, tensions between truth and justice in cases of genocide and war crimes, and legal changes needed to devise viable rules. Cross-listed with PSCI 4276. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5286 - International Relations: War or Peace? (3 Credits)

Presents alternative theoretical frameworks for the explanation of war and peace. Investigations of the efficacy of international law, just-war norms and the UN in preventing or containing conflict. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4286. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5326 - Advanced International Political Economy: Globalization (3 Credits)

Engages the current debate about globalization. Conceptualizes globalization and evaluates the pros and cons of global trade and finance for developed and developing countries. Develops a model for a sustainable and just global economy. Cross-listed with PSCI 4326. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5354 - Seminar: Environmental Politics and Policy (3 Credits)

Consideration of competing models of the policy process in natural-resources decision making. Focus on selected case studies. Impact of environmental and pro-growth forces on the political process. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5365 - Global Ecological Crises (3 Credits)

Overview of global ecological problems such as climate change, transboundary pollutions, and loss of bio-diversity in an attempt to understand the political, economic, and cultural forces behind these problems and the status of legal and policy initiatives to address them. Cross-listed with PSCI 4365. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5414 - Non-Profits and Social Change (3 Credits)

Explores role of non-profits in catalyzing social change. What are obstacles and opportunities to leveraging social change through nonprofits? What factors shape non-profits to be either transformational or systemstabilizing forces? Cross-listed with PSCI 4414. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5424 - The Social Economy and Sustainable Development (3 Credits)

Theory and practice of social economy initiatives like worker cooperatives, micro-credit networks, mutual aid associations and the fair trade movement. How do grass-roots activists and legal frameworks affect the direction and possibilities of the solidarity economy?

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5434 - The Cooperative Movement: Politics and Policy (3 Credits)

Explores the history, current status, and emerging developments in the cooperative movement, both domestic and global. Topics include the political, organizational, and financial challenges and opportunities facing worker, producer, and consumer cooperatives. Examines how cooperative enterprises have adopted both reformist and revolutionary responses to the capitalist system, and how legal regimes and grassroots movements shape the future of cooperative enterprises. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5446 - Advanced Indigenous Peoples' Politics (3 Credits)

Builds upon the theoretical and applied foundations of PSCI 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations and the Organization of American States systems. Note: this course assumes that students have completed PSCI 4144 or 4146 or equivalent. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4446. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5457 - American Political Thought (3 Credits)

Critical examination of American political life at the intersections of social categories such as race, class, gender, sexuality, disability, and Indigeneity. Exploration of key and marginal thinkers through a variety of texts and genres. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4457, ETST 4457, and ETST 5457. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5468 - Research Methods in Political Science (3 Credits)

Analysis and evaluation of research methods, techniques, and empirical materials in political science application to Internet research. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5477 - The U.S. Constitution: Law and Politics (3 Credits)

An intensive analysis of the most recent doctrinal developments in the areas of federal jurisdiction, federalism, separation of powers, commerce, taxing and war powers, civil liberties and civil rights. Note: this course assumes that students have completed PSCI 4477 or 4487 or equivalent. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5535 - Labor and Working Class Politics (3 Credits)

Explores the status of the labor movement both in the U.S. and internationally, as well as the political, philosophical, and social implications of socioeconomic class status and identity. Cross-listed with PSCI 4535. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5545 - Immigration Politics (3 Credits)

Introduces students to central theories of migration and a survey of immigration law and policy in the 20th century. Highlights experiences of Mexican and Latin American immigrants and related topics, including U.S.-Mexican foreign relations, bilingual education, undocumented immigration and globalization. Cross-listed with PSCI 4545. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5548 - Labor Law and Collective Bargaining (3 Credits)

Explores the history, current status, and emerging developments in U.S. labor law. Examines how labor law structures worker organizing and collective bargaining efforts. Focus on labor/management relations in such processes as contract administration, workplace anti-discrimination efforts, and labor organizing rights. Explore new developments like labor law in relations to social media usage and independent contracting. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5550 - Labor, Trade Unions and the Global Economy (3 Credits)

Examines transnational trade unionism amid the global economy, with an emphasis on trade unions in a comparative perspective. How do labor activists and trade unions strive to establish institutions and mechanisms to assert worker rights and power in today's international political-economy? Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5555 - International Women's Resistance (3 Credits)

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4555, WGST 4555/5555 and ETST 4555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5610 - Seminar: Middle East Politics (3 Credits)

Examines the Middle East regional system and the region's role in world politics. Investigates questions regarding politics in Iran, Iraq, Palestinian-Israeli relations, political Islam, and relations with the United States.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5615 - Seminar: Chinese Development (3 Credits)

Discussion of readings about China. Analysis of several of the following: party-government relations, ideology and political behavior, leadership, diplomacy, political and economic development and post-Mao reforms. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5726 - Seminar on U.S. and China Relations (3 Credits)

Detailed examination of historical context and current issues in U.S./China relations. Emphasis on modern period, with particular attention to changing relations in context of rising power of China. Cross-listed with PSCI 4726. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5747 - Legal Reasoning and Writing (3 Credits)

Introduces the fundamentals of legal reasoning and legal argumentation through intensive class discussion, formal debate and writing. Attention is given to the relationship between case and statutory law and their application in trial and appeals courts in the United States. Cross-listed with PSCI 4757, COMM 4750, 5750. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5807 - Seminar: Conflict Behavior and the Politics of Violence (3 Credits)

Theoretical and empirical analysis of conflict behavior with special emphasis on the explanation of political violence. Revolution, international warfare, and urban unrest are studied as forms of political violence, and the role of systematic empirical research is emphasized in the development of general theories of intergroup conflict. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5808 - Strategies of Peacebuilding (3 Credits)

The course investigates the theories and strategies of peacebuilding in societies that have endured intrastate conflict and/or massive human rights violations and asks whether peace and justice and democracy can or should work together and how forgiveness and reconciliation might develop. Cross-listed with PSCI 4808. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5837 - Contemporary Issues in Civil Liberties (3 Credits)

Conflicting rights of individuals and groups in several areas of civil liberties, including religious groups, free speech, sexual freedom, racial quotas, and anti-governmental actions and publications. This course includes case law, readings, guest speakers and case discussions. Cross-listed with PSCI 4837. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5840 - Independent Study: PSCI (1-3 Credits)

Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5878 - War, Film, & International Law (3 Credits)

This course examines interactions of culture, politics, and law by chronologically investigating 20th-century war movies and the ways experiences and norms have shaped and been shaped by cinematic representations. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Cross-listed with PSCI 4878. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5914 - Community Organizing and Community Development (3 Credits)

The theory and practice of community organizing strategies and community development innovations. How can social activists build power at the grassroots to build equitable, sustainable, and healthy communities? Cross-listed with PSCI 4914. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing or permission of the instructor. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PSCI 5944 - CU in the City (3 Credits)

Investigation of community development strategies through seminar discussions, urban walking tours, and student field placement with a local community based organization, non-profit, or public office engaged in community development work. Cross-listed with PSCI 4944. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA). Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate majors in the Bachelor's to Master's program (PSCI-BA-BMA or INTS-BA-BMA).

PSCI 5950 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

PSCI 5960 - Master's Project (1-3 Credits)

Prereq: Graduate standing or permission of the instructor. Term offered: fall, spring, summer. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

PSCI 5995 - Global Study Topics (1-3 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing or permission of the instructor. Cross-listed with PSCI 4995. Term offered: summer. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Psychology (PSYC)

PSYC 5164 - Psychology of Perception (3 Credits)

Studies sensory processes and perceptual variables. Covers processes related to vision, audition, gustation and olfaction. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 4164. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5263 - Hormones and Behavior (3 Credits)

The hormonal regulation of behavior will be the primary focus of this course. Topics include: hormonal basis of sexual differentiation and behavioral differences, parental behavior, biological rhythms, aggression, mood and stress. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3263. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5264 - Exercise, Brain and Behavior (3 Credits)

This course explores the impact of physical activity status-being sedentary or physically active-on brain function and behavior. Topics include effects of exercise on cognitive function, mood disorders, stress, anxiety, sleep and drug addiction. Emphasis will be placed on understanding the neurobiological mechanisms by which exercise impacts behavior. Students who have received credit for this topic listed under PSYC 3600 may not receive credit for this course. Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing. Term offered: fall. Cross-listed with PSYC 3264. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

Typically Offered: Fall.

PSYC 5265 - Drugs, Brain and Behavior (3 Credits)

Explores the pharmacological, biological, and behavioral basis of drug effects. Topics include mechanisms of drug action, brain reward pathways, role of environment and history on drug effects, and the impact of science on drug abuse and medication development. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Term offered: fall, spring, summer. Cross-listed with PSYC 3265. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5803 - Principles of Psychological Testing (3 Credits)

Principles underlying construction, validation, and use of tests of ability, intelligence, and personality and of attitude surveys. Covers statistical topics such as content and construct validity, item analysis, and reliability analysis. Prereq: Admission to psychology graduate program. Cross-listed with PSYC 4803. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 5822 - Aging, Brain and Behavior (3 Credits)

Examines the aging process, behavioral changes during senescence and the accompanying changes in the aged brain. Changes that are part of healthy aging are studied, as will age-related brain disorders. Prereq: PSYC 1000 and 2220 with a C- or higher or Graduate standing. Cross-listed with PSYC 3822. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 1000 and PSYC 2220 with a C- or higher or Graduate standing

PSYC 5840 - Independent Study: PSYC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

PSYC 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 5990 - Topics in Psychology (1-3 Credits)

Advanced study of special topics to be selected by the instructor. Note: May be repeated for credit. Prereq: Permission of instructor. Cross-listed with PSYC 4990. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 6200 - Developmental Psychopathology (3 Credits)

The study and prediction of maladaptive behaviors and processes across time. Students develop a sophisticated understanding of important concepts related to emotional and behavioral problems in children and adolescents, including DSM-IV-TR diagnostic criteria and the basic tenets of successful intervention. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 6840 - Independent Study (1-3 Credits)

A structured experience, planned and implemented with the assistance of a sponsoring faculty member in ongoing programs of research or other scholarly activity. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Admission to the graduate program in psychology. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6841 - Independent Study: PSYC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

PSYC 6910 - Research Practicum (3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6930 - Clinical Internship (1-6 Credits)

Clinical experience in a setting which provides supervision by qualified professionals. Students participate in assessment, intervention, and/or evaluation and research. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Completion of 24 hours of course work in the UCD Psychology MA, Clinical program. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

PSYC 6950 - Master's Thesis (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

PSYC 7144 - Advanced Cognition and Emotion (3 Credits)

Overview of contemporary psychological theories and research in human learning, memory, cognition, and emotion. Emphasis on cognitive and affective neuroscience and the physiological-psychological organization of functional systems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7205 - Advanced Developmental Psychology (3 Credits)

A survey of neurobiological, cognitive, social and cultural processes in human development from conception through adulthood. Prereq: Admission to the Psychology MA, Clinical program or Clinical Health Psychology Ph.D. program or with permission of instructor and a graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Admission to the Clinical Health Psychology Ph.D. Program or with Permission of instructor and Graduate program director

PSYC 7220 - Advanced Biological Bases of Behavior (3 Credits)

Survey course of advances in psychobiology which inform our understanding of the brain and behavior with special emphasis on perception, action, and cognition. A major goal of the course is to foster appreciation of the importance of interdisciplinary research. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7262 - Health Psychology I (3 Credits)

Part I of a 2-course sequence. Presents crucial aspects of health psychology and behavioral medicine, including theoretical models, anatomy and physiology epidemiology, health promotion and primary prevention of medical problems. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7350 - Psychotherapy I (3 Credits)

Surveys some of the major schools of psychotherapy, including cognitive and cognitive-behavioral therapies as well as motivational interviewing. Coverage also includes therapy techniques, process of therapy, and treatment-outcome research. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7360 - Psychotherapy II (3 Credits)

Theoretical approaches and techniques used in research, assessment and treatment of major forms of psychopathology, including anxiety, depression, schizophrenia and substance abuse, as well as marital problems and childhood disorders. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7400 - Child Assessment (3 Credits)

Psychometric theory and practice in assessment of children with focus on the diagnostics, the WISC-III, and personality assessment. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7410 - Assessment I: Personality (3 Credits)

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to psychosocial functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7420 - Assessment I: Intellectual and Cognitive Assessment (3 Credits)

Reviews the process of selection, evaluation, administration, utilization, and interpretation of psychological tests related to cognitive functioning. Issues of validity, reliability, utility, clinical judgement, ethics, and cross-cultural competence are reviewed. Prereq: Admission to the Clinical Health Psychology Ph.D. program, Clinical Psychology MA program, or by permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7485 - Diversity in Clinical Psychology (3 Credits)

Designed to foster understanding of diversity and its implications for clinical practice, research, and mental health policy. Students will learn to orient to the worldviews of clients from diverse backgrounds and to tailor their interventions to competently serve individuals in a pluralistic society. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7490 - Topics in Health Psychology Summer Lecture Series (1-3 Credits)

Weekly lectures given by Clinical Health Psychology department faculty, advanced graduate students, alumni and area professionals on selected topics in the field. Note: This course is required for first, second and third-year graduate students. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7500 - Advanced Psychopathology (3 Credits)

Key features of major mental disorders in adult populations. Includes classification, DSM diagnosis, epidemiology, course and prognosis, age/culture/gender features, etiology and biological bases. Prereq: Admission to Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7511 - Historical and Philosophical Foundations of Psychology (3 Credits)

Philosophical and historical antecedents to contemporary psychology, with particular emphasis on clinical psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7520 - Experimental Psychopathology (3 Credits)

Theories of etiology of major psychopathologies, including: personality disorders, anxiety disorders, affective disorders, substance use disorders and schizophrenia and other psychoses. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7700 - Clinical Research Methods (3 Credits)

Principles of research methodology in clinical psychology. Major topics include research ethics, subject recruitment, ethnic and cultural considerations, selecting and evaluating research measures, epidemiology and comorbidity, taxonomic and outcome research and research design. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7710 - Multivariate Statistics (3 Credits)

Topics include multiple regression, logistic regression, factor analysis, and structural equation modeling. Both experimental and non-experimental designs will be considered. Students will learn underlying theory of these techniques as well as how to perform analyses using software like SPSS and Mplus. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7713 - Advanced Statistics (3 Credits)

Experimental design and analysis of controlled interventions and evaluations. Emphasis on multifactor analysis of variance, orthogonal contrasts, post-hoc tests, multiple regression, and analysis of co-variance. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7730 - Ethics and Professional Issues in Psychology (3 Credits)

An in-depth exploration of the values and ethical ideas that guide professional practice in psychology, including philosophical ethical principles and professional codes of conduct. Specific topics include confidentiality, informed consent, competence, and respect for persons. Students are expected to be able to think about and communicate difficult ethical concepts in the form of class participation and a major paper. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7830 - Clinical Interviewing (1-3 Credits)

Students practice interviewing and develop skills, including the ability to listen actively, to critique their own work and the work of others, and to think carefully about issues that arise in clinical work with clients. Prereq: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7910 - Clinical Practicum (1-3 Credits)

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 1 credit hour during year one (spring and summer semesters only) and 3 credit hours during years two (fall, spring, and summer semesters) and three (fall semester only). A total of 14 credit hours of PSYC 7910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 14 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 14.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 7911 - Clinical Practicum II (1-6 Credits)

Clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of settings. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8100 - Clinical Behavioral Medicine (3 Credits)

Presents basic assessment and psychotherapeutic techniques used for patients with various disorders, focusing on cognitive-behavioral methods and the unique needs of patients experiencing chronic disease.

Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8200 - Teaching Skills Workshop (3 Credits)

Students will learn, explore, and practice the basic principles and strategies of good teaching. We will also explore research and theory for teaching at the college level. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8262 - Health Psychology II (3 Credits)

Part II of a 2-course sequence. Further aspects of health psychology and behavioral medicine, including health service utilization, patient-provider relationships, social support, terminal illness and issues related to chronic disease states. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8501 - Primary Care Psychology (3 Credits)

Examines emerging trends in the role of professional psychology and psychologists serving as health care providers in primary care medical settings. Knowledge, skills and attitudes as they apply to competencies unique to primary care will be covered. Prereq: PSYC 7262 and PSYC 8262 and PSYC 7730 with a B- or higher. Restriction: Restricted to PSYH-PHD majors within the College of Liberal Arts and Sciences. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PSYC 7262 and PSYC 8262 and PSYC 7730 with a B- or higher

Restriction: Restricted to PSYH-PHD majors within the College of Liberal Arts and Sciences

PSYC 8502 - Cardiovascular Health Psychology (3 Credits)

The course focuses on research and clinical practice regarding psychological factors related to cardiovascular functioning and disease. The physiology of the cardiovascular system will be presented and primary and secondary prevention as related to psychological functioning will be emphasized. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8503 - Group Interventions in Health Psychology (3 Credits)

The course will serve as an introduction to group psychotherapy and group process principles with a focus on the design, implementation and delivery of evidence-based group interventions in the field of Clinical Health Psychology. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8504 - Advanced Psychopharmacology (3 Credits)

In this course, we explore topics in psychopharmacology that builds upon psychopathology knowledge by identifying neurological and physiological pathways that affect cognition and psychological health and how these pathways are affected by pharmacology. The focus is on examining and critically analyzing conceptual, theoretical, and practical aspects of psychopharmacology and psychophysiology as well as how to apply these concepts to medically ill patients in psychotherapy. Restriction: Admission to the Clinical Health Psychology PhD program or with permission of instructor and graduate program director. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8550 - Advanced Social Psychology (3 Credits)

This is a graduate level seminar that broadly covers the social bases of behavior from a social psychological perspective. It includes discussion of topics such as group processes, attribution theory, discrimination, and perspectives on attitudes. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8910 - Advanced Clinical Practicum (1-4 Credits)

Advanced clinical experience under supervision of licensed, doctoral-level professionals. Students participate in assessment, intervention, and/or evaluation and research in a variety of health care settings to address the interface between physical and psychological functioning. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Students should enroll in 3 credit hours during years three (spring and summer semesters only) and four (fall and spring semesters only). A total of 12 credit hours of PSYC 8910 are required. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8938 - Pre-Doctoral Internship (1-3 Credits)

Intensive full-time clinical experience with supervision by licensed, doctoral-level professionals. Interns participate in assessment, intervention, and/or evaluation and research in a variety of settings. Students apply through the Association of Psychology Postdoctoral and Internship Centers (APPIC) national matching process. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration. Restrictions: Restricted to Graduate majors in PSYC and PSYH. Term offered: fall, spring, summer. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to Graduate majors in PSYC and PSYH.

PSYC 8990 - Doctoral Dissertation (1-10 Credits)

Independent research on the doctoral dissertation in Clinical Health Psychology. Prereq: Admission to the Clinical Health Psychology Ph.D. Program. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 10 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 10.

Additional Information: Report as Full Time.

Public Administration (PUAD)

PUAD 5001 - Introduction to Public Administration and Public Service (3 Credits)

Examines fundamental theories, structures, and processes of governance in the United States, including the evolving roles and responsibilities of public, nonprofit, and private sectors. Covers topics including public service values and ethics, cross-sector and intergovernmental partnerships, and comparative public administration. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5002 - Organizational Management and Behavior (3 Credits)

Course covers elements which, when combined, create a resilient learning organization. Topics include organization theory and design, managing human capital, group development and performance, inter- and intra-group communication, information management, and ethical decision-making. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5003 - Research and Analytic Methods (3 Credits)

Examines qualitative and quantitative research methods used to answer questions and inform decisions in public and nonprofit settings. Methods covered include reviewing scholarly literature; formulating research questions; selecting appropriate design, data collection and sampling strategies; and analyzing data. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5004 - Economics and Public Finance (3 Credits)

Evaluates the role of government with respect to provision and financing of public goods. Explores 5 broad topics: 1) welfare & microeconomics 2) expenditure theory 3) resource mobilization (emphasis on taxation) 4) fiscal federalism 5) basic budgeting & analytical tools. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5005 - The Policy Process and Democracy (3 Credits)

Introduces theoretical and applied studies of the policy process. Policy process includes how (I) issues are conceptualized and brought forward as problems needing action; (II) policies are designed and selected; and (III) enacted policies are implemented, monitored, evaluated, and revised. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5006 - Public Service Leadership and Ethics (3 Credits)

Provides understanding of the role played by leaders within and across public and nonprofit organizations, and in complex social environments. Examines theories of leadership, skills and processes employed by effective leaders, and ethical conduct of leaders in shaping societal values. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5007 - Qualitative Research Methods (3 Credits)

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis. The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a research project. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7007. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5008 - Evidence-Based Decision-Making (3 Credits)

Course provides opportunities for students to use skills developed in Research and Analytic Methods (including developing research/evaluation questions, designing surveys/interview guides, and analyzing data) to inform decisions and/or develop recommendations in multiple policy, management, and program evaluation scenarios. Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: PUAD 5003 with a B- or higher. Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5010 - Rocky Mountain Program (3 Credits)

This program encourages participants to examine their public sector roles, develop an understanding of their leadership styles, develop communication skills, and enhance their ability to think more systematically and strategically in their positions. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5030 - Denver Community Leadership Forum (3 Credits)

Designed to increase cross sector cooperation and enhance personal leadership skills and knowledge, program is administered annually February to November. Students gain skills in conflict management, participate in Outward Bound program in July, and learn leadership theories and concepts from a variety of presenters and trainers.

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5110 - Seminar in Nonprofit Management (3 Credits)

This course provides an overview of the principles and concepts that are unique to nonprofit management. Topics include executive management, funding diversity, human resource management, marketing, volunteer management and ethics. Students are also given an introduction to the history and the importance of the nonprofit sector. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 3110 and CRJU 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5115 - Effective Grant Writing for Nonprofit and Public Sector Managers (3 Credits)

This course is designed to provide students with the knowledge and skills to perform one of the most critical functions for any public or nonprofit sector agency today: gaining funds through proposals. Students learn how to locate and analyze funding opportunities through public and private funders and how to research, plan and write effective and competitive proposals. The course provides theoretical and practical knowledge about persuasive writing, the proposal submission and review process, building effective relationships with funders and how to proceed after post-funding decisions (positive or negative). Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5120 - Nonprofits and Public Policy (3 Credits)

Examines the intersection of public policy and the nonprofit world and the ways in which each affects the other. The course examines current policy issues that relate to the nonprofit sector such as conversion of nonprofit to for-profit status, regulation of the nonprofit sector, issues of financial management, the role of nonprofits in devolution and privatization of government services, tax exemptions, "charitable choice," donor control, governance and the future of the future of the sector. The course examines the ways nonprofits have affected the policy process and public policies by exploring the factors that shape social movements, nonprofit advocacy, strategies of influence, and the role of nonprofits in social movements such as Civil Rights and the environment. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5125 - Civil Society and Nongovernmental Organizations (3 Credits)

This course is designed for students interested in the international nonprofit sector. The course compares non-Western forms of civil society with the American tradition of civil society. Students will learn about the efforts of Nongovernmental Organizations (NGOs) working in Third World countries to influence democracy, free association, and/or increased political and societal pluralism. Additionally, the course will focus on NGO management and governance issues in countries where there are strict controls and limits on the activities of NGOs. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5130 - Collaboration Across Sectors (3 Credits)

The blurring of the three economic sectors - government, business and nonprofits- continues to increase as more partnerships are developed across sectors. This course focuses on collaboration and partnerships involving public, nonprofit and for-profit organizations. Additionally, students are expected to gain an understanding of the issues and policies associated with the bidding, contracting, program delivery and reporting processes when nonprofit organizations are contracted to achieve public sector goals and/or private sector objectives. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5140 - Nonprofit Financial Management (3 Credits)

Provides a grounding in financial management for the "non-accountant" by focusing on an array of knowledge and management skill areas necessary for allocating and controlling resources and for analyzing, reporting and protecting the fiscal health of the organization. Topics include key accounting principles, understanding and using financial statements, the budget development process, cash flow analysis, banking relationships, using the audit report, maximizing investment policy and strategy, and understanding the boundaries of tax exemption. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4140 and CRJU 5140. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5145 - Philanthropy (3 Credits)

Today, the organized field of philanthropy and its companion field, impact investing, are growing at a remarkable speed. This course will explore the origins of philanthropy and impact investing and provide students with an in-depth understanding of how philanthropy works today and the nuances that exist among different forms of philanthropy and investment: individual giving, foundations, corporate philanthropy, and impact investing. It will also explore new trends among individual and institutional investors and unpack the different approaches that funders are taking to influence how services are delivered and the striking efforts to affect systems changes. Cross-listed with PUAD 4145. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5150 - Fundraising & Financial Resource Development (3 Credits)

Designed to provide a comprehensive overview of funding sources available to nonprofit organizations (e.g., foundation and governmental grants, individual and corporate donations, entrepreneurial sources of revenue and events.), as well as detailed information on how to secure support of the various sources presented. Additionally, students are expected to gain both theoretical and practical knowledge relevant to why it is important to diversify an organization's revenue streams. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5160 - Nonprofit Boards and Executive Leadership (3 Credits)

The important roles and responsibilities of a voluntary board of directors and the process of governing are often misunderstood. This course explores the special powers of a nonprofit board of directors as framed by and responsive to public policy. From the perspective of organizational behavior and theory, the course examines the leadership role and interplay between board members and the executive director. The examination includes a comparative analysis of different governing models, and explores fundamental questions of board composition, the role of advisor boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5170 - Strategic Management for Nonprofit and Public Managers (3 Credits)

Designed to train public and nonprofit managers in the effective use of strategic management tools and techniques traditionally used by corporations. Strategic management tools and skills, although traditionally used by business, should not be seen as the exclusive domain of corporations. The course teaches students how to adapt traditional strategic management capabilities to the particular conditions of public and nonprofit organizations. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5180 - Social Entrepreneurship (3 Credits)

Designed to introduce students to the concept of social entrepreneurship. Using nonprofit (and public) organizational examples, students gain an understanding of what it means to be an innovative manager. Students study techniques designed to advance an organization's mission and increase organizational effectiveness, accountability and efficiency through the use of for-profit techniques within a nonprofit context. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5190 - Comparative Nonprofit Sector Development (3 Credits)

Students will analyze the evolution, scope, structure, financing, and role of nonprofit sector in select countries. Through readings, lectures, case studies, students will gain a depth understanding of civil society organizations' role with respect to the market and state. Restriction: Restricted to Grad and Non-Degree Grad students only. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5200 - Education Policy (3 Credits)

This course provides a broad overview of the history, purposes, and structure of public education in the United States, including topics such as education systems and governance, institutional actors, funding, education reform trends, and policy implementation and outcomes. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5210 - Education Finance (3 Credits)

This course provides students with a fundamental understanding of public school funding and expenditures in the United States, and the impact of school finance policy and practice in driving educational and social outcomes. Key issues addressed include revenue sources and funding mechanisms; the evaluation of school funding through the lenses of equity, adequacy, efficiency, and the achievement of desired educational outcomes; specific topics such as teacher compensation, special education, and facilities funding; the strategic use of funding to drive reform in K-12 education; and the future of public education funding. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5220 - Human Resource Management (3 Credits)

Covers human resource functions in public and nonprofit agencies. Topics include job analysis, compensation, recruiting, selection, rewarding, training and development. Contemporary issues concerning civil service reforms are also presented. Cross-listed with PUAD 4220. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PUAD 5230 - Education Systems Leadership (3 Credits)

This class uses the combined lens of history, public administration, organizational theory, and public policy analysis to better understand the complexity of public education systems in America. The class focuses heavily on recent changes to the "one best system" model that developed from the 1850s through 2000, and particularly emphasizes reforms that aim to provide greater autonomy to individual schools and encourage more of a governance role for school districts. The class is very interactive and includes a number of guest speakers and experts. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Prereq: Graduate standing (Grad or Non-Degree Grad)

PUAD 5250 - Intergovernmental Management (3 Credits)

Surveys the basic literature of intergovernmental management and examines the interactive role of managers at federal, state, and local levels of government. Emphasis is placed on current intergovernmental issues. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5260 - Managing Diversity (3 Credits)

Using a systems approach, diversity within organizations is examined through the construction and review of theories in private, public, and nonprofit organizations. Existing models of managing diversity are examined and analyzed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5271 - Managing Conflict and Change (3 Credits)

Explores the process of change in organizations, communities, society, and conflicts that arise. Through the use of relevant case studies and role playing exercises, students are provided a practical framework for looking at change and managing conflict associated with change. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5280 - American Public Service Environment (3 Credits)

The American Public Service Environment. This course, intended for students from cultures outside the United States and for whom English is a second language, introduces students to public service professionals working at area government and nonprofit organizations. Students learn about the American system of government, American political and cultural values, and the workplace context for public service in America. Through interactions with public service professionals and course assignments, students improve their language skills as well as their knowledge about government and civil society in America. Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program). Max Hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program)

PUAD 5290 - Comparative Public Administration for International Students (3 Credits)

This year-long course provides mid-career international students with individualized attention as they actively compare and contrast American public administration with that of their home countries, develop their own organizational and personal leadership skills, and prepare to implement lessons learned in the U.S. in their own cultural and professional context. Restriction: Restricted to International students enrolled in the International MPA (IMPA) program only. Repeatable. Max Hours: 6 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: This course is restricted to International students enrolled in the International MPA (IMPA program)

PUAD 5310 - Policy Formulation & Implementation (3 Credits)

Building on PUAD 5005, students learn how policy is developed and implemented in several levels of government - local, state, federal - and within organizations themselves. The course makes use of the case studies to explore the intricacies of developing and implementing policy and the political, economic, and institutional contexts that affect these two states of policy development. Students also consider the different criteria that can be used to judge the effectiveness of programs and policies. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5320 - Public Policy Analysis (3 Credits)

Provides training in the systematic analysis of policy and program initiatives using an economics orientation and employing a case method. The course covers benefit-cost analysis, cost-effectiveness analysis, present values, and the treatment of multiple criteria in public sector program analysis. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5325 - Public Private Partnerships (3 Credits)

This course has been designed to introduce students to public private partnerships (PPPs) as a field of study and practice using Colorado as a laboratory for current practice, policy, strategy, management and finance. Students will engage current examples of PPPs as cases, learn and exchange in class presentations with guest lecturers currently leading PPPs and evaluate projects in class assignments doing research, analysis, and field interviews. Students will enhance their knowledge as well as skills commonly used in public, private, nonprofit and enterprise management and the public policy context and narrative of PPPs in international and U.S. practice. Cross-listed with PUAD 4325. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5330 - Intermediate Statistical Analysis (3 Credits)

Follows PUAD 5003/7003 and is focused on more advanced statistical techniques to be used in research. These techniques include the use of regression in time series analysis; binary response; nonlinear, logistic, and profit models; and factor and path analysis. Evaluating potential problems with model specification and the remedies are included. Students are required to test hypotheses using these models with a data set. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 7330. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5350 - Program Evaluation (3 Credits)

Describes the theory and methodology for the design of social research and demonstration projects and the application of analytic and statistical methods for evaluating public programs. Focus is on the application of evaluation methods and techniques of data interpretation. Report preparation is emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5361 - Capstone Seminar (3 Credits)

Synthesizes competencies gained throughout the course of study into a client-based research project. Students conduct independent research, complete a final written project demonstrating their qualifications and expertise, and orally present findings to a committee of faculty and public administration professionals. Prereq: PUAD 5001, 5002, 5003, 5004 or 5503, 5005 and 5006 and 5008 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: PUAD 5001, 5002, 5003, 5004 or 5503, 5005 and 5006 and 5008 with a B- or higher. Restriction: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

Additional Information: Report as Full Time.

PUAD 5370 - Media and Public Policy (3 Credits)

Explores the conventions and practices of the print and electronic media in the United States. The course enables students to better understand the place of the media in society, the way the media look at themselves and how journalists confront conflicting values in the performance of their roles. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5380 - Citizen Participation: Theory and Practice (3 Credits)

Tackles the issues of citizen participation and community involvement in theory and practice. Students work in class on understanding the theoretical foundations that are relevant to citizen participation. Students engage in significant out-of-class projects to ground them in the practice of public involvement. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5410 - Administrative Law (3 Credits)

Examines legal aspects of policy implementation particularly the relationship between courts and administrative agencies. Covers standards of judicial review and agency action; administrative procedure and due process; selected special topics such as rights, liabilities, and immunities of public employees; and administrative discretion and scientific uncertainty. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5420 - Law and Public Policy (3 Credits)

Examines the relationship between courts and legislative assemblies. Explores how legislators use the policy process to shape and influence the exercise of judicial authority, and how the courts affect the policy process in reviewing the constitutionality of state and federal legislation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5440 - Negotiation and Conflict Resolution (3 Credits)

Focuses on concepts and skills necessary to negotiate policy and management decisions and manage internal and external conflicts. Designed to help students understand the dynamics that affect negotiations and to apply the principles and strategies of negotiation in a variety of decision making and dispute resolution contexts. Cross-listed with PUAD 4440. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5455 - Environmental and All-Hazards Management Law (3 Credits)

Conveys knowledge of the statutes, regulations, administrative law, and court decisions governing the management of hazards, natural resources, and environmental protection, with a focus on the risk and liability that individuals and organizations face in these areas of law. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5455. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5460 - Political Advocacy (3 Credits)

Addresses advocacy & lobbying issues of public policy & govt problems. Special attention is given to how advocacy process works in the public sector & policy making bodies & how lobbying techniques & processes can be understood. General focus on practical applications at all levels of govt with primary attention to state & local govt. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5501 - Contemporary Issues in Revenue and Tax Administration and Policy (3 Credits)

This course provides a contemporary evaluation of Colorado's tax structure, revenue system, and the state budget. The interaction of politics, the initiative process, the State Constitution, and stakeholders is studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5502 - Public Financial Management and Policy (3 Credits)

Provides basic understanding of issues & tools relevant to financial mgmt of public & non-profit org, including managerial acct (managing resources & obligations, investing idle funds, reporting, financial statement analysis, overview of budgeting, revenue forecasting, & costing) & debt management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5503 - Public Budgeting and Finance (3 Credits)

Covers concepts to manage the fiscal purse, prioritize resources, use financial documentation, and analyze fiscal data. Includes budget policy, content, format, processes, performance management, forecasting, inflation adjustment, time value of money, cost analysis, financial condition analysis, and spreadsheet competency. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5540 - Organization Development (3 Credits)

Studies the dynamics involved in managing and facilitating change in organizations by application of behavioral science knowledge. Emphasis is placed on both cognitive and experiential learning. A background in organization theory and administrative behavior is required. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5615 - Health Policy (3 Credits)

Draws upon existing policy models and evaluates the status of health policy formulation and implementation. Health policy topics include Medicaid and Medicare, managed care, health care reform proposals, telemedicine, the non-profit and for-profit role in health. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5625 - Local Government Management (3 Credits)

Relates the systems, processes, and principles of public management to the local government environment. Public management concepts such as strategic planning, bureaucracy, formal and informal organizational structures, human resource planning, management control, systems theory, and administrative behavior are explored within the context of local government. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5626 - Local Government Politics and Policy (3 Credits)

Examines local government from the perspective of politics and public policy making. The course focuses on local government political structures, policy analysis and formulation, political forces in administrative decision making, and the relationships between professional administrators and elected officials. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5628 - Social Problems and Policies (3 Credits)

Examines local government and nonprofit approaches to addressing common urban social problems. Topics covered may include urban poverty, crime, education, housing, and immigration. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5630 - Economic Development (3 Credits)

As governments search for new ways to be efficient, improve performance and leverage resources, they are also looking at their communities, states and regions in terms of competitiveness, international trade and globalization innovation, collaboration and partnerships. This course will look at practices where economic development includes these elements: the Colorado Innovation Network, the Colorado Office of Economic Development and International Trade, the Metro Denver and Denver South Economic Development Partnerships, Mile High Connects, the Downtown Denver Partnership, and public-private partnerships across multiple sectors in transportation, broadband, water and innovation. Students will develop an economic development strategy based on knowledge and tools learned in the course. Political and professional leadership will be part of the dialog. Crosslisted with PUAD 4630. Max hours: 3 credits

Grading Basis: Letter Grade

PUAD 5631 - Seminar in Environmental Politics and Policy (3 Credits)
Examines the fundamental principles of politics and policy that shape strategies of environmental protection. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in environmental politics and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5632 - Seminar in Environmental Management (3 Credits)
Examines the practical challenges facing environmental managers today, using a series of case studies. Focuses on the role of institutional processes, government organizations and nongovernmental organizations in the practice of environmental management. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5638 - Colorado Politics, Policy, and Administration (3 Credits)
This course focuses on the state-level policy-making process in Colorado, and how that process is affected by local, state, and federal politics, administration, and other policy-making constraints applicable to the state. Substantive topics covered will vary, but students will be exposed to a wide range of perspectives and experiences from practitioners and policy influencers engaged in state-level politics, policy-making, and administration. Cross-listed with PUAD 4638. Restriction: Restricted to Graduate level and Non-Degree Graduate students only. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

PUAD 5644 - Environmental and Hazards Law (3 Credits)
This course provides a broad overview of issues in all hazards management as well as natural resource and environmental health law. It will convey knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. The course will also cover aspects of environmental policy implementation and enforcement including the legal aspects of natural resource allocation and management and environmental protection. Cross-listed with CRJU 5644. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5650 - Public Service in Emergency Management and Homeland Security (3 Credits)
Introduces emergency management and homeland security including: management of hazards, emergencies, disasters, and the networks of government and nonprofit organizations providing services. Focuses on principles of emergency management and homeland security at state and local jurisdictional levels. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with PUAD 4010, CRJU 4010, and CRJU 5650. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5655 - Principles of Emergency Management (3 Credits)
Introduces the discipline and practice of emergency management. Topics include administrative practice and processes by which public policy shapes governmental responses to hazards, emergencies, and disasters. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5655, CRJU 4012, and PUAD 4012. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.
Typically Offered: Fall.

PUAD 5710 - Public Sector Technology (3 Credits)
This course addresses the impact and current use of technology in the modern government and nonprofit sector environments, including implications for interacting with citizens and organizational stakeholders, organizational decision-making and communication, and core functions such as budgeting and human resources. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5720 - Public Policies for Hazards and Disasters (3 Credits)
Examines public policymaking and administration related to homeland security and disasters in the United States, including the interplay between security and traditional hazards management concerns. Assesses the role of institutional processes, governmental and nongovernmental organizations in policy development and implementation. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5720. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5740 - Sustainable Energy Policy (3 Credits)
This course will cover the basic principles and operation of policy and regulation that impact the production and use of energy (with a focus on transportation and electricity generation) from all of the major sources currently available and used. We will analyze (and, through a sustainability lens, critically evaluate) energy from water (hydroelectric, hydrokinetic), coal, domestic and international petroleum, natural gas and nuclear reactors. A significant portion of the course will focus on electricity generation and associated policy, technologies and regulation. In the context of each energy source and use, we will review and discuss sustainability practices, policies, and, issues. Cross-listed with PUAD 5740. Max hours: 3 credits
Grading Basis: Letter Grade

PUAD 5910 - Nature and Scope of Interpersonal Violence (3 Credits)
Analyzes the social, historical, political, legal, and psychological aspects of gender-based violence. Topics include definitions of the problem, demographics, children and youth exposure, and national and global perspectives. Strategies for prevention, intervention, treatment, and social change are explored. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5910. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5920 - The Psychology of Interpersonal Violence (3 Credits)
Addresses the contributions and limitations of current empirical and clinical psychological literatures on interpersonal violence (IPV). Special attention is paid to the effects of IPV on adult and child survivors, their psychological needs, and the contribution of psychological knowledge to understanding and addressing the problem of IPV. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5920. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5930 - Interpersonal Violence Law and Policy (3 Credits)
Examines public policy and law related to interpersonal violence (e.g., welfare reform, child maltreatment, criminal and civil court responses). Topics include the role of law enforcement agents, victim advocacy, and methods to change law and policy. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5930. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5940 - Interpersonal Violence Leadership, Advocacy, and Social Change (3 Credits)
Examines different models of social change and various approaches to public address, including social movements and campaigns. Strategies for engaging diverse individuals, systems and communities to address interpersonal violence will be emphasized. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Cross-listed with CRJU 5940. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5960 - Interpersonal Violence and Health Care (3 Credits)
Provides students with the knowledge and skills necessary for responding to the health care needs of patients experiencing interpersonal violence (IPV). Also explores how healthcare professionals can develop public & institutional discourses that transform healthcare policies & systems to address the health needs of IPV survivors. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 5961 - Interpersonal Violence, Health Advocacy and Systems Change (3 Credits)
Explores how healthcare professionals can develop successful public & institutional discourses that transform healthcare policies & systems to address the health needs of patients experiencing interpersonal violence. Methods of advocacy, activism & organizational change that produce positive results including effective educ techniques. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Letter Grade with IP
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6600 - Special Topics: Public Administration (1-6 Credits)
Studies special topics relevant to public administration, such as public/private sector partnerships, community participation, international development, conflict management, regionalism, managing economic options for Colorado, and nonprofit management and marketing. Each semester various topics are studied. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 15 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 15.
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6650 - Professional Topics in Public Service (1-3 Credits)
This series of elective courses delivers just-in-time professional skills and topical content relevant to the needs of today's public service workforce. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 3 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 18.
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6700 - Community-Based Field Experience and Seminar (3 Credits)
Students work in small groups to complete substantive projects for government agencies and community organizations, led by faculty instructor. Topics addressed will vary depending on the needs of the community partner. Prerequisite: Completion of PUAD 5003 and permission of instructor. Restriction: Restricted to SPA graduate students. Max hours: 3 Credits.
Grading Basis: Letter Grade
Prerequisite: Completion of PUAD 5003 and permission of instructor.
Restriction: Restricted to SPA graduate students.

PUAD 6840 - Independent Study: PUAD (1-6 Credits)
Affords students the opportunity to do independent, creative work. Prereq: Permission of instructor. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6910 - Internship (1-3 Credits)
For students who have not had government experience. Studies and reports are made while students have full- or part-time administrative traineeships, internships, or similar positions in government agencies or government-related organizations. Prereq: Completion of the common core courses. It is recommended that at least three of the track courses also be completed. Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Max hours: 3 Credits.
Grading Basis: Pass/Fail Only
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.

PUAD 6950 - Master's Thesis (3-6 Credits)
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver. Repeatable. Max hours: 6 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 6.
Restrictions: Restricted to Graduate and Graduate Non-Degree majors within CU Denver.
Additional Information: Report as Full Time.

PUAD 7007 - Qualitative Research Methods (3 Credits)

Focuses on qualitative research methods that incorporate field work techniques such as observation, interviews, and content analysis. The main objective is to discover practicalities and limitations of ethnographic methods with a comparative methodology perspective. Students are required to conduct a search project. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Cross-listed with PUAD 5007. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 7010 - Advanced Seminar in International Public Policy (3 Credits)

Explores advanced approaches and techniques in the study of public policy from international perspectives. The course includes lectures, student research presentations, and discussions with international public policy scholars. The course also includes public policy readings and writing assignments tailored to the student interests and needs. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8010 - Historical and Comparative Foundations of Public Administration (3 Credits)

A doctoral seminar on developments and changes in public administration as a field of study. It examines how theory and practice have evolved and how the field is defined, studied and taught. It must normally be taken during the first full semester of the doctoral program. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8020 - Seminar in Public Management (3 Credits)

An in-depth examination of contemporary literature, concepts, and theories of public management. Current issues and research problems are emphasized to prepare students for their advanced research. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8030 - Seminar in Public Policy (3 Credits)

Offers an in-depth examination of contemporary literature, concepts, and theories of public policy, with an emphasis on policy process. Current issues and research problems are emphasized to prepare students for their advanced research. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8040 - Seminar In Economic and Institutional Foundations of Public Affairs (3 Credits)

Offers an in-depth examination of the economic and institutional foundations of public affairs, with an emphasis on the evolution of theory and research in these fields. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8050 - Quantitative Methods I (3 Credits)

Introduces foundational principles & techniques of quantitative analysis in social sciences generally & in public affairs specifically, incl statistical inference, regression analysis, other related estimation techniques, & commonly-used statistical software packages. Students should have taken master level stats course w/in last 3 yrs. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8060 - Seminar On The Conduct Of Empirical Inquiry (3 Credits)

Introduces basic elements of research design in the social sciences, focusing on the relationship between theories and methods, concept development and measurement, selection of observations or cases, and alternative methods of data collection and analysis. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8070 - Quantitative Methods II (3 Credits)

Moves beyond basic linear regression techniques by covering advanced analytic methods for improved causal inference. Students will also be introduced to data management skills and techniques for using longitudinal data. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8840 - Independent Study: PUAD (1-6 Credits)

(Doctoral level) Affords students the opportunity to do independent, creative work. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

PUAD 8990 - Doctoral Dissertation (1-10 Credits)

Once students are admitted to candidacy, they must be continuously registered for dissertation credit each fall and spring semester or be automatically dropped from the program. Students must register for 5 credit hours per semester. In cases where students will not be using any university resources during a particular semester, they may petition the Ph.D. director to register for fewer semester credit hours. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Restrictions: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only. Repeatable. Max hours: 30 Credits. Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.
Restriction: Restricted to students in the Public Affairs PhD program (PAFF-PhD) only.

Additional Information: Report as Full Time.

Recording Arts (MSRA)

MSRA 5000 - Introduction to Graduate Studies (3 Credits)

Surveys existing literature and research in science, technology, and pedagogy of recording arts. Extensive use of available resources in library, electronic and print, trade and scientific publications are explored. Use of computer applications for research and publication are developed. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5001 - MSRA Research Seminar (3 Credits)

In preparation for their thesis/portfolio, students learn research techniques by: applying skills from MSRA 5000, learning research design, performing research, interpreting results, and writing. Students will discover opportunities to add to the body of audio literature and recording techniques. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5500 - Topics in Professional Audio (1 Credit)

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5505 - Introduction to Audio Post Production (3 Credits)

Reviews all aspects of audio synchronized with picture, including music, sound effects, narration, and dialog replacement. Topics studied with respect to film, video and multi-media. Cross-listed with MUSC 3505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5510 - Topics in Recording Arts (3 Credits)

Selected topical subjects to include live or studio sound recording, sound reinforcement, new technologies or practices in the audio industry. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Typically Offered: Fall, Spring, Summer.

MSRA 5515 - History of 20th Century Film Music (3 Credits)

This survey of the history of 20th century music in film will acquaint aspiring filmmakers and musicians with a history of the music, as well as concepts of film theory and the creative use of film music. Restricted to RCDA-MS majors within the College of Arts and Media. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5525 - Multimodal Interaction for Music (3 Credits)

This course explores human-computer interaction in music composition and performance. Students will learn to program and use open-source hardware to build novel and creative musical interfaces and instruments. Restriction: Restricted to Graduate Students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

MSRA 5530 - Live Sound Reinforcement (3 Credits)

This course focuses on the basic elements of sound reinforcement: acoustics, equalization, equipment and mixing techniques. The major emphasis is the production of the final sonic product. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5535 - Sound Effects & Foley for Visual Media (3 Credits)

Techniques for recording sound effects in the field and recording Foley in the studio. Use of library effects. Use of mixing techniques and plug-ins to create more complex sounds. Cross-listed with MUSC 4535. Prereq: MSRA 5505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5545 - Music Editing in Visual Media (3 Credits)

Music editing for film and television. Spotting notes, temp tracks, cue sheets, scoring session management, dubbing stage fixes, and Performing Rights Artists notes. Cross-listed with MUSC 3545. Prereq: MSRA 5505. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5550 - Audio Production III (3 Credits)

Advanced studies in sound recording and reinforcement, aesthetics and techniques of multi-track analog and digital recording and stereo imaging. Team lab recording projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5555 - Dialogue Editing & Mixing for Visual Media (3 Credits)

Dialogue editing and mixing for film and television. Recording Voiceover, Automated Dialogue Replacement, Group ADR, Efforts. Noise-reduction, mix levels, compression, limiting, EQ and use of reflected sound. Cross-listed with MUSC 3555. Prerequisite: MSRA 5505. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5505.

MSRA 5560 - Mastering & Advanced Digital Audio (3 Credits)

A study and practice of the art of mastering. Topics covered include: history, monitoring, signal flow, metering, jitter, audio restoration, limiting, creating a CD pre-master, & mastering for new media. Students will get practical experience mastering their own projects. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5565 - Re-recording Mixing for Visual Media (3 Credits)

Techniques for mixing dialogue, ADR, music, sound effects, background ambiences and Foley. Different level standards and deliverables. Cross-listed with MUSC 4545. Prereq: MSRA 5535 or MSRA 5555. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MSRA 5535 or MSRA 5555.

MSRA 5575 - Graduate Surround Sound (3 Credits)

This lecture-lab course deals with surround sound in film, digital TV and DVD's. Topics include monitoring, microphone techniques, recording, mixing, mastering, delivery formats and psychoacoustics. Students work on two lab projects in the semester. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5576 - Surround Sound II (4 Credits)

Students will work on advanced surround sound projects and study mixing aesthetics, high-definition technology and authoring. Students will have advanced knowledge of these topics and produce professional, competitive material for their demo. Prereq: MSRA 5550, 5575 and 5505, or permission of instructor. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5580 - Graduate Audio Seminar I (3 Credits)

Faculty and majors of the music engineering program assemble to discuss and demonstrate issues of artistic and technical applications of recording technology. Student projects, faculty, and guest lectures provide topical focus. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5581 - Graduate Audio Seminar II (3 Credits)

Capstone project based course in which students complete professional quality projects in music production and/or post production. Students refine their engineering skills and develop new skills required for integration in the music industry such as portfolio design and resume development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5590 - Graduate Audio Production (3 Credits)

Deals with advanced audio skills for music recording, including technical and artistic considerations. This is a required course for the MSRA degree. Max hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5600 - Topics in Music (1-3 Credits)

Various topics relating to the study of music performance, music technology and music business. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

MSRA 5605 - Audio Post Production II (3 Credits)

Students will learn advanced Pro Tools techniques by designing, conceptualizing, and completing sound for a student film project. This interdisciplinary course prepares students for working relationships between Recording Arts, Film and Video areas and an entry level job in post production. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5820 - Digital Music Techniques (3 Credits)

Studies the general principles and applications of digital music technology, emphasizing the function and operation of specific computer software. Topics include digital audio workstations, MIDI sequencers, digital signal processing programs, and distribution on optical discs and computer-based mediums. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 5840 - Independent Study for MSRA (1-3 Credits)

Allows graduate students to pursue in-depth study of an audio-related topic, to be discussed with and approved by the Graduate Advisor. A final report or other tangible results will be determined on a case-by-case basis. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

MSRA 6214 - Forensic Audio Analysis (3 Credits)

Students learn concepts through the application of techniques related to audio enhancement, digital media authentication, acoustic analysis, and automatic speaker recognition. The acquisition and analysis of digital evidence applying reliable methods prepares students for forensic audio analysis in the laboratory. Coreq: MSRA 6254 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: MSRA 6254

MSRA 6224 - Forensic Video and Image Analysis (3 Credits)

Students learn concepts through the application of techniques related to forensic video collection and image enhancement, authentication, photogrammetry, and comparison. The acquisition and analysis of digital evidence applying reliable methods prepares students for working on forensic imagery in the laboratory. Coreq: MSRA 6264 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: MSRA 6264

MSRA 6254 - MATLAB for Forensic Audio Analysis (1 Credit)

Advanced application of MATLAB for the forensic analysis of audio will be presented including file access, FFT and waveform plotting, and signal detection. Through the exploration of correlation and using mean quadratic difference students will be prepared for media authentication. Coreq: MSRA 6214 and admittance to Certification in Forensic Audio Analysis Program required. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: MSRA 6214

MSRA 6264 - MATLAB for Forensic Video and Image Analysis (1 Credit)
Advanced application of MATLAB for the forensic analysis of images will be presented covering image processing and analysis techniques. Through exploring analyses such as Photo Response Non-Uniformity and the Bi-Dimensional DFT, students are prepared for image authenticity examinations. Coreq: MSRA 6224 and admittance to Certification in Forensic Video and Image Analysis Program required. Max hours: 1 Credit.

Grading Basis: Letter Grade

Coreq: MSRA 6224

MSRA 6510 - Graduate Audio Studies Pedagogy (3 Credits)
Surveys available resources for audio education. Interdisciplinary materials in physics, acoustics, engineering, music, broadcast, medicine, psychology, multi-media, theater, and film or video are reviewed. Emphasis on design and development of new methods and materials are pursued. (MSRA graduate students only.) Prereq: MUSC 5000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 6550 - Sound Design (4 Credits)
Deals with designing sound for live theater, film, video, television, theme parks, games and soundscapes. Focuses on using technology to achieve specific esthetic aspects of audio production. This is accomplished through lectures, listening assignments, research and lab practice. (For graduate students only.) Max hours: 4 Credits.

Grading Basis: Letter Grade

MSRA 6950 - Thesis in Professional Audio (4 Credits)
With the guidance of a thesis advisor, each candidate for the MSRA degree select an approved topic for scholarly review, research and publication. The approved materials are evaluated for written and oral defense. Prereq: MUSC 5000, 5590, 6510, 6580, 6530. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

MSRA 6951 - Professional Audio Portfolio Thesis (4 Credits)
With the guidance of a portfolio advisor, each candidate for the MSRA degree produce specified documentation and audio materials that reflect the career intentions of the candidate. A completed "Show kit" or professional "Demo" of the candidate's specialty are produced. The approved materials are evaluated for written, audio and oral defense. Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Restriction: Restricted to RCDA-MS majors within the College of Arts and Media

Religious Studies (RLST)

RLST 5010 - Comparative Religious Systems (3 Credits)
A cross-cultural analysis of religious belief and behavior. Emphasis is placed on religions found among non-Western cultural groups and includes consideration of how major religions of the world are manifested on local levels. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ANTH 4130, 5130, RLST 4010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5020 - Sociology of Religion (3 Credits)

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4610, SOCY 5610, RLST 4020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5030 - Race, Religion and Belonging in the United States (3 Credits)

Race/ethnicity and religion are conconstitutive social and cultural formations that have played a fundamental part in determining the boundaries of belonging of the United States. In this course, students will interrogate when, why and how race/ethnicity and religion have been used to delineate borders, determine citizenship, navigate legal classifications, dictate social mobility, and regulate economic possibilities. We will analyze both primary sources #such as sermons, reality TV shows, court cases and graphic images#as well as scholarly writing to explore how formations of race and religion have shaped notions of belonging in the US nation#state, thereby constructing the boundaries of the state itself. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ETST 4030, ETST 5030, RLST 4030, HIST 4209 and HIST 5029. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5040 - Psychology of Religion (3 Credits)

Examines the theories developed by some of the great names in the field of psychology and their approaches to religion. Questions addressed include why people become religious, how religion functions in their lives, religious experience and assessment of the validity of religious claims. Key theorists studied include: William James, Sigmund Freud, Carl G. Jung, Abraham Maslow and Erich Fromm. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4040. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5060 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 4060, and SSCI 5600. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5152 - Religion & Communication (3 Credits)

This course focuses on the relational/coconstitutive dynamics between religion, culture, and communication and how that shapes the world in which people live; how the legacy of political religious conflict, in conjunction with international culture wars, instigate socio-cultural conflict and change; and how an in-depth study of the dynamics of religion, culture, and communication can improve intergroup/intercultural/international relations or even negotiation/conflict resolution processes. Students will develop capacity to critically analyze the socio-cultural and political implication of religious ideology (radical and moderate), ways in which these ideologies are performed and communicated, and their (students') agency/ability to contribute to intercultural/international understanding, conflict resolution, civic engagement, and/or social justice efforts. In addition, upon completion, students should be prepared to engage in complex conversations about the idea of religion, its role and relevance in human lives, and recognize several commonalities and differences between their (students') and non-Western/other societies' worldviews, cultures, and communicative dynamics. We will engage these topics through multiple and diverse readings, examples from television, film, and social media, reflexive writing assignments, research and analytical activities, critical discussions, and experiential learning activities. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with COMM 4152, INTS 4152, RLST 4152, COMM 5152, and INTS 5152. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5160 - Mysticism (3 Credits)

Explores the mystical strains within the world's great religious traditions. Jewish, Christian, and Islamic mystics did not always express the same beliefs and attitudes as mainstream adherents. When mystics are placed side-by-side, amazing similarities appear. One cannot always tell whether a given mystical statement is Hindu, Jewish, Sufi, or Christian. This class examines these mystical traditions, East and West. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4160. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5300 - Myth and Symbol (3 Credits)

Approaches the field of classical Greek mythology and religion from the perspective of Jungian archetypal theory. The deities of the ancient Greeks are presented as archetypal patterns with universal correlates elsewhere in world religions. A foundation in C. G. Jung's archetypal theory will be offered to ground the course material. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4300. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5360 - Freudian and Jungian Perspectives in Dream Analysis (3 Credits)

Focuses on the phenomenon of dreams in a way that differs distinctly from the traditional approach to the subject in the field of psychology. "Spiritual" approaches to dreams are examined, as well as some major theorists on dreams, especially the work of Sigmund Freud and C. G. Jung. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4360. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5400 - Differing Concepts of God (3 Credits)

God, Gods, and Goddesses have been imagined in many different modes, forms, aspects, and guises throughout human history. This course investigates Paleolithic models of God, the Great Goddess of the Neolithic era, the Gods of mythological traditions, Biblical God, the abstract God of the philosophers, the God of the pantheists, the deists, and the God of the mystics. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4400, PHIL 4650 and 5655. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5420 - Goddess Traditions (3 Credits)

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4420 and WGST 4420/5420. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5440 - Concepts of the Soul (3 Credits)

Asks the questions: What is the nature of the human being? What makes us "human?" Do humans have a "soul?" What is its nature? Is it different from the "spirit?" What is its ultimate fate? Examines the various theories put forward by philosophers of both Eastern and Western traditions. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4440 and PHIL 4470, 5470. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5460 - Death and Concepts of Afterlife (3 Credits)

Examines how the major religious traditions approach the issue of death. Where the Egyptians were fascinated by death, their Mesopotamian and Hebrew neighbors saw no kind of experience continuing after death. Concepts of the Final Judgment Day and the end of the world follow in Zoroastrianism, Christianity, and Islam, while Indian religions developed a sophisticated theory of reincarnation and the "art of dying." Finally, we will turn to Chinese belief in ancestral spirits. Restriction: Restricted to Graduate level students. Cross-listed with RLST 4460. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5462 - Islam in Modern History (3 Credits)

This course studies Islamic thought and practice over the last two centuries in terms of major historical processes that have operated at local, national, and global scales. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with RLST 4462, HIST 4462, HIST 5462. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5480 - Perspectives on Good and Evil (3 Credits)

Examines "problem of evil" as formulated in the philosophical tradition. Presents classical formulation of the problem, traditional solutions & classical critiques of each answer. Considers perspectives of various religious orientations, which deal differently with the question of suffering. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4480/5480, RLST 4480. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5500 - Religion and Politics (3 Credits)

Exploration of: (1) theoretical perspectives on the relationship between religion and politics; (2) causes of and justifications for the historical development of the Western separation of "church and state;" (3) contemporary responses to and analyses of this separation; and (4) several current debates about public policy in America that reveal tensions between these two spheres. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PSCI 4057, 5057 and RLST 4500. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5710 - Women and Religion (3 Credits)

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 4710/5710, RLST 4710. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5730 - Whores and Saints: Medieval Women (3 Credits)

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ENGL 4510/5510, RLST 4730 and WGST 4510/5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

RLST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Research & Eval Methods (RSEM)

RSEM 5001 - Special Topics (3 Credits)

Specific topics vary from semester to semester. Cross listed with RSEM 4001. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 5050 - Classroom Assessment (3 Credits)

This course strengthens educator classroom assessment practice. It provides students with a foundational understanding of quality measurement practices to support evaluation of assessment instruments and tasks, determination of appropriate scoring approaches, and interpretation of state and district assessment results. It also deepens students' formative assessment practice supported by practical strategies and tools. Finally, it facilitates student integration of formative and summative uses of assessment with instruction and planning.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 5080 - Research In Schools (3 Credits)

Provides teachers with the competencies necessary for examining their professional experiences using formal and informal methods of inquiry. Teachers become more reflective practitioners who investigate questions that arise from their work in schools. The course also prepares teachers to critique published research in a thoughtful manner. The intended audience for the course is beginning and experienced P-12 teachers.

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 5100 - Basic Statistics (3 Credits)

A first-level course on the use and interpretation of descriptive and inferential statistics. Topics covered include: frequency distributions, measures of central tendency and measures of variability; shapes of distributions; standard scores; scattergrams, correlation and regression; and t-tests. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 5110 - Introduction to Measurement (3 Credits)

A first-level course that examines the nature and purpose of psychological measurement. Particular attention is paid to the concepts of reliability, validity, norms, interpretation of scores, response sets, fairness in testing, and norm-referenced vs. criterion-referenced interpretation of scores. A variety of instruments that are used to measure human attributes and behaviors are studied. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 5120 - Introduction to Research Methods (3 Credits)

This is a survey course that examines the purposes of research, the methods of quantitative, qualitative, and mixed research, and the processes involved in research studies. The primary aims of this course are to improve your skills as an informed consumer of research and to provide you with the skills to conduct your own research. Cross-listed with RSEM 4120. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 5600 - Issues in Assessment Development (3 Credits)

This is the first course of a three-course series for a Classroom Assessment Certificate. The course focuses on developing the conceptual knowledge and technical skills required to help K-12 practitioners to develop valid, reliable, and fair assessment of student learning. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 5610 - Formative and Summative Assessment in the Classroom (3 Credits)

This is the second course of a three#course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning.

Prereq: RSEM 5600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 5600

RSEM 5620 - Analyzing, Using, and Reporting Assessment Results (3 Credits)

This is the third course of a three#course series for a Classroom Assessment Certificate. The course focuses on developing conceptual knowledge and technical skills required to develop and implement formative and summative assessments to support student learning.

Prereq: RSEM 5610. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 5610

RSEM 5800 - Workshop: Topics in Research and Evaluation Methodology (1-4 Credits)

Topics and credit hours vary from term to term. Often workshops address a current topic in research, evaluation, or measurement by considering its scholarly foundations and its application to schools and other educational settings. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

RSEM 5840 - Independent Study: RSEM (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

RSEM 5910 - Practicum in Research and Evaluation Methodology (1-4 Credits)

Supervised work in projects that provide experience in data analysis, research, measurement, or evaluation. Requires a minimum of 75, 150, 225, or 300 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

RSEM 6050 - Seminar in Assessment Policy Issues (3 Credits)

Three public policy issues involving educational assessment are analyzed. The policy issues selected vary to reflect current policy debates. Sample issues are school accountability, grading and report cards, performance-based graduation standards, classification of students as having special needs, merit pay for teachers, and retaining students in grade. Each analysis examines (a) policy history; (b) value assumptions and constituency interests; (c) validity of assessment procedures; and (d) consequences of policy alternatives. Prereq: RSEM 5050 or RSEM 5110. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: RSEM 5050 or RSEM 5110

RSEM 6200 - Single Case Research Design for Education (3 Credits)

This course provides an overview of Single Case research Design (SCRD) within educational settings. The course will describe single case designs (SCD), specify the types of questions that SCD's are designed to answer, discuss the internal and external validity of SCD's, outline SCD standards, and describe implementation of different SCRD's. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 6500 - Teacher as Researcher (3 Credits)

Taken concurrently with Contextual Curriculum II, this course provides opportunities to engage in inquiry while analyzing professional experiences within their classroom context, sharing data/results from an action research project and critiquing and synthesizing published educational research. Max Hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 6950 - Master's Thesis (1-4 Credits)

A master's thesis is part of the degree track options. Credit hours, topic, and workload are determined by the student's advisor. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

RSEM 7000 - Doctoral Seminar in Research Methods (3 Credits)

Designed for students beginning doctoral work, explores conceptual and practical bases for doing and evaluating educational research. The chain of reasoning linking the conceptualization of a research problem, the posing of questions in a social process of inquiry, and the collection and interpretation of evidence is examined through the use of examples. Restriction: Restricted to EDHDPHD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to EDHDPHD, LDRE-EDd, EDLI-PhD and SPSY-PsyD majors within the School of Education and Human Development.

RSEM 7001 - Applied Research Methods I (3 Credits)

Introduces students to principles of quality research design, and provides a conceptual and hands-on procedural introduction to quantitative and qualitative methods common in education-related research. Takes an explicit focus on understanding and mitigating potential biases in research methods and design. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to LDRE EDD majors within the School of Education and Human Development

RSEM 7002 - Applied Research Methods II (3 Credits)

Prepares students with conceptual knowledge and procedural skills of designing quality, applied research from critical and pragmatic perspectives. Focus on quantitative analysis methods, including survey and assessment item development. Students continue deeper review of extant literature for intended dissertation topic. Prereq: RSEM 7001 or permission from the instructor. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7001. Restriction: Restricted to LDRE-EDD students.

RSEM 7003 - Applied Research Methods III (3 Credits)

Content will focus on qualitative data collection and analysis methods, and mixed methods design including program evaluation and improvement research. Students will work with faculty on development of dissertation in practice design. Prereq: RSEM 7002 or permission from the instructor. Restriction: Restricted to LDRE-EDD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7002. Restriction: Restricted to LDRE-EDD students.

RSEM 7010 - Educational Assessment And Measurement (3 Credits)

This advanced course incorporates foundational knowledge and application of assessment and measurement tools in school settings. Foundational concepts are utilized to better understand student achievement and growth indicators, and inferences about school and educator effectiveness; survey measures are also addressed. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7050 - Methods of Survey Research (3 Credits)

Covers the purposes and methods of survey research. Topics included are: goals and uses of survey research, data collection methods, questionnaire and interview protocol design, reliability and validity of data collection methods, sampling, ways to reduce error in data collection and sampling, data analysis techniques commonly used in survey research studies, interpreting and reporting results, and ethical issues. Students design and conduct a survey as part of the course requirements. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7080 - Methods of Qualitative Inquiry (3 Credits)

Prepares graduate students to conduct field research employing qualitative methods and perspectives. Students become familiar with evolving theoretical and methodological perspectives in qualitative research drawn from anthropology, clinical psychology, sociology and education. Students apply techniques of qualitative data collections and analysis in a pilot investigation. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7100 - Advanced Methods of Qualitative Inquiry (3 Credits)

An advanced seminar directed at individuals who have completed an introductory course in methods of qualitative research. Topics included are qualitative data collection, data analysis, and writing about data. Students collect and analyze data. Prereq: RSEM 7080. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7080

RSEM 7110 - Intermediate Statistics (3 Credits)

Continuation of RSEM 5100, covering more advanced methods of analyzing data, with an emphasis on the use and interpretation of descriptive and inferential techniques. Topics covered are one-way and two-way analysis of variance; power; multiple comparisons; factorial designs and factorial ANOVA; partial correlation, multiple correlation and regression; analysis of covariance; and selected use of packaged statistical programs (SPSS). Prereq: RSEM 5100. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: RSEM 5100

RSEM 7120 - Advanced Methods in Quantitative Inquiry and Measurement (3 Credits)

Covers advanced topics in quantitative design and analysis, including advanced measurement topics. Topics include: specific types of design used in experimental, quasi-experimental, co-relational, and survey research; multivariate ANOVA, ANCOVA and MRC; factor and trend analyses; classical test theory; and IRT approaches. Students analyze their own data using techniques presented in the course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

RSEM 7130 - Advanced Measurement using Item Response Theory (3 Credits)

This course will consider theory and methods for the educational and psychological measurement of latent variables using item response theory. Students will understand and be able to apply concepts from item response theory, specifically the Rasch model, to understand, evaluate, and construct measures. Recommended students have Introduction to Statistics and a survey design course. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7140 - Management & Secondary Analysis of Large Datasets (3 Credits)

Large education, community, and health datasets are underutilized research resources, providing large samples and longitudinal data otherwise too costly and time-consuming to collect. Students will work in their discipline area to learn to access, manage, and appropriately analyze extant datasets. Prereq: RSEM 7110 Intermediate stats or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7110

RSEM 7150 - Mixed Methods Research (3 Credits)

This seminar is directed at individuals who have completed both qualitative and quantitative research courses and are interested in combining these in the mixed-method approach. Focus will be on developing the skills and knowledge needed to formulate mixed-methodological research questions in which quantitative and qualitative data collection, analysis and interpretational techniques are utilized simultaneously or sequentially. Prereq: RSEM 6100 and RSEM 7110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 6100 and RSEM 7110

RSEM 7200 - Ethnography (3 Credits)

This course is designed for persons interested in studying the phenomenon of learning in family and community contexts. The course blends foundational readings in the learning sciences and the ethnography of education with "participant-observation" fieldwork. The fundamentals of ethics regarding studies involving human persons, building relationships with study participants, becoming an "observant participant," writing field notes, and co-authoring meaning with study participants will be covered. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7210 - Program Evaluation in Schools (3 Credits)

This advanced course incorporates foundational knowledge and application of the topic of program evaluation as it applies to inquiry and decision making in schools and other educational settings. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7220 - Program Evaluation Theory and Design (3 Credits)

This course introduces a variety of program evaluation theories, designs, approaches, and tools useful for evaluating a program or policy, including needs assessment, formative and summative evaluations, process evaluation, monitoring outputs and outcomes, impact assessment, and cost analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

RSEM 7300 - Research Grant Writing (3 Credits)

The purpose of this course is to provide students with a deep understanding of grants and writing grant proposals targeted to major funders' requests for proposals. Students will learn the parts of a grant proposal, writing style difference, budgets, participate in a mock grant reviewer panel, and write a full grant proposal. Max hours: 3 Credits. Grading Basis: Letter Grade

RSEM 7500 - Special Topics: Research and Evaluation Methods (1-6 Credits)

Specific topics vary from semester to semester. Restriction: Restricted to graduate level students. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 12.

Restriction: Graduate level students

RSEM 7700 - Multi-Level Data Analysis (3 Credits)

Focus is on the analysis of nested data (e.g., students within classrooms and schools, public transportation users within cities) using HLM.

Applications include multilevel multiple regression, growth models, and experimental designs. Familiarity with multiple regression and factorial ANOVA is required. Prereq: RSEM 7110 Intermediate Statistics or equivalent. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7110

RSEM 7800 - Intro to Structural Equation (3 Credits)

This course assumes no prior experience with Structural Equation Modeling, and serves as both theoretical and practical introduction. We will relate SEM to participants' previous knowledge of multiple linear regression, then expand to examine correlated and causally related latent constructs. Prereq: RSEM 7110: Intermediate Statistics or equivalent, or instructor consent. Restriction: Restricted to Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: RSEM 7110 Restriction: Restricted to Graduate level students

RSEM 7840 - Independent Study: RSEM (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

RSEM 7900 - Thesis/Dissertation Proposal Writing (3 Credits)

This course is designed to provide you with a structure and support for developing the initial elements of your dissertation or thesis proposal. This course can be considered an 8week intensive writing session providing a framework for completing a solid first draft by week 8. Max hours: 3 Credits.

Grading Basis: Letter Grade

Risk Management (RISK)

RISK 6129 - Practical Enterprise Risk Management (3 Credits)

Enterprise RM involves identifying the risks and opportunities faced by a firm, assessing them, developing and implementing a plan to address them, and then monitoring progress. Students will learn the basics of ERM while working with risk management professionals to develop and present such a plan to an ongoing business. Cross-listed with RISK 4129. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6209 - Cyber Risk Management (3 Credits)

Computer networks and the data that travels upon them are under constant and increasing attack. This course will focus on a discussion of how state and non-state actors utilize this form of asymmetrical warfare to infiltrate government and corporate networks, risk management responds and risk strategies apply. Cross-listed with RISK 4209. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6309 - Strategic Risk Management (3 Credits)

This course introduces strategic risk management, the process of managing the uncertain and unknown risks to a firm's plans to add value to its owners and society. Cross-listed with RISK 4309. Max Hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6409 - Employee Benefits and Workforce Risk Management (3 Credits)

The course surveys an array of popular employee benefit programs to attract, protect, and retain valued employees. It also focusses on risk management programs that invest in human capital and address the downside risks of employing a workforce. Cross-listed with RISK 4409 and MGMT 4460/6760. Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6509 - Global Risk Management (3 Credits)

This course is designed to study how risk is transferred globally. The course will include travel to London, which is the home to many of the world's largest insurers and reinsurers. While in London, we will visit and have presentations from insurance brokers, companies, Lloyds of London, and reinsurers. Prereq: One RISK course. Cross-listed with RISK 4509. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: One RISK Course

RISK 6709 - Life and Health Insurance (3 Credits)

This course introduces students to life and health insurance concepts and policy types with an emphasis on insurance planning for individuals and businesses. The insurance industry and trends within are also explored. Prereq: BUSN 6640. Cross-listed with RISK 4709. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: BUSN 6640

RISK 6809 - Principles of Risk Management & Insurance (3 Credits)

This course prepares students for advanced work in insurance and RM. The course first covers the nature of risk and risk fundamentals, insurer operations and insurance regulation. It then considers the principal techniques of managing risk exposures and the basis of decision making in management of business and personal risks. Coreq: BUSN 6640 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Coreq: BUSN 6640

RISK 6840 - Independent Study (3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

RISK 6909 - Corporate Risk Management (3 Credits)

This course provides an overview of the corporate risk management process. It considers the ways companies identify their risk exposures, the tools used to measure and mitigate those exposures including the latest developments in alternative risk transfer, and ultimately, how risk management adds value to the firm. Co-req: BUSN 6640. Max hours: 3 Credits.

Grading Basis: Letter Grade

Co-req: BUSN 6640

School Library Program (SCHL)

SCHL 5030 - Cultivating Learning Skills in Library Leadership (3 Credits)

In an increasingly shifting world and work force, both our student and adults will need to demonstrate learning skills to thrive in K-12 and post-secondary world. Teacher-librarians are guides for students and staff in ALL learning skills. Collaboration, innovative thinking, critical thinking and are areas of library leadership covered. Cross-listed with SCHL 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5040 - Information Storage and Utilization (2 Credits)

Provides basic principles and practices of utilizing standard methods for organizing, accessing and storing information. Includes cataloging and classification in text-based and electronic systems. Max hours: 2 Credits.

Grading Basis: Letter Grade

SCHL 5100 - School Libraries in the Digital Age (3 Credits)

An introduction to the School Library profession, including its history, standards, organizations, and current trends. Course focuses on foundational principles and roles of school librarianship, as well as methods for developing a culturally responsive resource collection, both print and electronic. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5160 - Managing School Libraries (3 Credits)

Case studies in the organization and administration of school library and instructional leadership of programs and projects. Topics include project management, personnel administration, budget development, management strategies, copyright and intellectual freedom. Cross-listed with SCHL 4160. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5200 - Promoting Literature in Schools (3 Credits)

Approaches the school library as a resource to promote literacy and development in children and young adults. Topics include genres of literature, methods for advising students towards appropriate reading and media resources, and the promotion of multiple literacies - information, new media, and transliteracy. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCHL 5830 - School Library Workshop (0.5-4 Credits)

Specific content and titles vary depending upon the particular school library skills addressed in the course. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SCHL 5913 - School Library Field Experience (3 Credits)

Field experiences in selected K-12 school libraries that meet a high professional standard. The course serves as a capstone experience for endorsement and master's degree plans and helps induct students into the School Library profession by bridging theory and practice. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

School Psychology (SPSY)

SPSY 5010 - Introduction to Counseling in School Psychology (3 Credits)

Provides an overview of the counseling theories relevant to the practice of school psychology and an understanding of the role of theory in practice. Includes consideration of legal/ethical issues and both the cultural and developmental context of the major theories. Max Hours: 3 Credits.

Grading Basis: Letter Grade

SPSY 5100 - Introduction to the Neurosequential Model in Education (3 Credits)

Introduction to the core concepts of the Neurosequential Model[®] (NM) that impact learning. Core concepts include basics of brain organization, brain development, understanding state-dependent learning, the stress response systems, and the impact of trauma and neglect on children.

Max hours: 3 Credits.

Grading Basis: Letter Grade

SPSY 5200 - Application of Neurosequential Model in Education (3 Credits)

Focuses on helping educators and other school personnel better understand and teach challenging children by offering practical strategies and classroom practices related to structuring classroom schedules, activities and interactions that can help all children (not just children impacted by trauma and adversity) learn in an optimal way.

Prereq: SPSY 5100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5100.

SPSY 5600 - Behavior Analysis and Intervention (3 Credits)

This course introduces knowledge and skills necessary for school psychologists to proactively address child problem behaviors. Content includes application of Positive Behavioral Support (PBS), functional behavior analysis and intervention, evaluation of behavior change.

Relevant federal, state regulations are also addressed. Restriction:

Restricted to SPSY majors within the School of Education and Human Development or consent of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 5800 - Workshop: Topics in School Psychology (1-6 Credits)

Repeatable. Max hours: 15 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 15.

SPSY 5840 - Independent Study: SPSY (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPSY 5900 - School-Based Multicultural Interventions (3 Credits)

The course will foster students' understanding and appreciation of diversity and its applications for school psychology practice, educational contexts, and mental health policy. Students will learn to evaluate and implement school-based mental health and educational interventions with a multicultural lens. Prereq: SPSY 6100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Prereq: SPSY 6100

SPSY 6100 - School Psychology: Professional and Legal Foundations (3 Credits)

This course covers topics related to the practice of school psychology, both past and present, including legal/ethical obligations/issues, accreditation, certification/licensure, culturally competent practice, roles/responsibilities, and evaluation and accountability. Observation in schools and related settings is required. Prereq: Admission to School Psychology Program. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6150 - Psychoeducational Assessment I (3 Credits)

Focuses on assessment of cognitive ability, cognitive processes, and achievement in children and adolescents. Topics include selection, administration, and interpretation of ability and achievement tests; psychological report writing, and psychometric, historical, theoretical, and cultural issues in assessment. Test administration required. Restriction: SPSY PsyD: Restricted to SPSY PsyD majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6160 - Psychoeducational Assessment II (3 Credits)

Focuses on the assessment of adaptive behavior, personality, and social-emotional functioning in children and adolescents. Topics include selection, administration, and interpretation of these types of measures; cultural considerations in psychological assessment, psychological report writing, and developing interventions. Test administration required. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6170 - Applied Developmental Science and Assessment (3 Credits)

Examines theories and research in developmental psychology to provide a foundation for clinical services to children and families in applied settings. Includes coverage of developmental assessments and services for infants/toddlers. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6350 - School-Based Interventions: Children, Youth and Families (3 Credits)

Provides theoretical and practice-oriented introduction to child therapy in schools. Weaves together skills and techniques essential to theory and implementation of psychotherapeutic techniques. Course activities compliment the systemic and group-based interventions examined in SPSY 6400. Prereq: SPSY 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5010.

SPSY 6400 - School-Based Interventions: Groups, Classrooms and Systems (3 Credits)

Provides students with advanced study of research on and techniques of classroom and small group interventions. Includes instruction on the evaluation of intervention effectiveness. Systemic, school-wide interventions are addressed. Prereq: SPSY 5010. Restriction: Restricted to SPSY majors within the School of Education and Human Development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 5010. Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6410 - Psychoeducational Assessment of Culturally and Linguistically Diverse Students (3 Credits)

Prepares students to provide psychoeducational assessments to children who are culturally and/or linguistically diverse. Content includes differentiation of language disorders versus language acquisition, and developing recommendations for accommodations and interventions to meet the unique psychoeducational needs of diverse children and youth. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6420 - Crisis Prevention, Planning and Intervention (3 Credits)

Introduces students to crisis theory, prevention research, and intervention strategies. The course is designed for school mental health professionals interested in developing advanced crisis counseling and intervention skills sufficient for use in school settings. The course emphasizes the importance of practical hands-on opportunities for skills development.

Prereq: COUN 5010 or SPSY 5010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: COUN 5010 or SPSY 5010

SPSY 6450 - School-Based Consultation for Mental Health Professionals (3 Credits)

A wide range of traditional or emerging consultation models emphasizing practical application of empirically-based approaches to advance the social or academic competence of students, classrooms, schools and districts. Hands-on experience supplement course content as students develop, refine, and practice their own eclectic consultation approach.

Prereq: SPSY 6100. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6100

SPSY 6500 - Affective Bases of Behavior and Psychopathology (3 Credits)

This course provides students with advanced concentrated study of the affective bases of behavior, including affect, mood, and emotion. This course also includes coverage of psychopathology and the diagnosis of mental disorders. Restriction: Restricted to SPSY majors within the School of Education and Human Development or consent of the instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to SPSY majors within the School of Education and Human Development.

SPSY 6550 - Academic Interventions in School Psychology (3 Credits)

Provides training in knowledge and skills for the use of educational intervention practices in school psychology, including the development, implementation, and evaluation of academic interventions in the areas of reading, math, and written language; curriculum based measurement and progress monitoring. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 6700 - Advanced Seminar in School Psychology (3 Credits)

This course covers advanced topics related to the practice of school psychology including applying and interviewing for internship, certification/ licensure, capstone preparation and completion, and the development of a professional identity. Prereq: SPSY 6911. Restriction: Restricted to School Psychology majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6911 Restriction: Restricted to SPSY majors

SPSY 6911 - School Psychology Practicum (3 Credits)

Supervised practice in providing comprehensive psychological services to children in grades preschool to 12. Students are placed in public schools or affiliated school-related agencies and supervised by practicing, licensed school psychologists. Prereq: SPSY 5600, SPSY 6100, SPSY 6150, SPSY 6160 or consent of instructor. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 5600, SPSY 6100, SPSY 6150, and SPSY 6160

SPSY 6915 - Practicum with Culturally and Linguistically Diverse Students (3 Credits)

This school psychology practicum experience is focused on developing multicultural competencies with culturally and linguistically diverse students through either a cultural immersion experience in Mexico or a local practicum placement in a culturally and linguistically diverse setting. Prereq: SPSY 6100 and SPSY 6150 and consent of the instructor. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 9.

Prereq: SPSY 6100 and SPSY 6150.

SPSY 6917 - Advanced Practicum in Psychological Assessment (1 Credit)

Under faculty supervision provide psychological assessment services to clients in the UC Denver Student and Community Counseling Center. Prereq: SPSY 6150, SPSY 6160, and consent of the instructor. Max hours: 1 Credit.

Grading Basis: Letter Grade

Repeatable. Max Credits: 1.

SPSY 6918 - Clinical Externship (1-3 Credits)

Clinical experience under supervision of licensed mental health professionals. Students participate in assessment and/or intervention in a variety of settings. Note: All field placements must be approved by the SPSY Program Director in advance of registration. Prereq: SPSY 6911. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 6911

SPSY 6930 - School Psychology Internship (1-6 Credits)

Supervised experience in the practice of school psychology with children and adolescents in a school or clinic setting. Prereq: SPSY 5900, SPSY 6100, SPSY 6410, SPSY 6911, SPSY 6350, SPSY 6400, SPSY 6450, SPSY 6500, or instructor consent. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Prereq: SPSY 5900, SPSY 6100, SPSY 6410, SPSY 6911, SPSY 6350, SPSY 6400, SPSY 6450, and SPSY 6500

SPSY 7500 - Biological and Neuropsychological Bases of Behavior (3 Credits)

Examines the biological basis of behavior emphasizing the relationship between the functions and structures of the brain including neuroanatomy, brain development, neurophysiology, neurochemistry, and psychopharmacology; and neuropsychological assessment principles. Prereq: SPSY 6150. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6150.

SPSY 7980 - Clinical Supervision & Admin of Psych Services (3 Credits)

Course prepares school psychologists to function in supervisory and administrative capacities in delivering mental health services. Content includes examination of clinical supervision theories, models, techniques; focus on development of skills for administrative roles, and understanding organizations from a systems perspective. Prereq: SPSY 6918. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: SPSY 6918 Restriction: Restricted to SPSY PsyD majors within the School of Education and Human Development

SPSY 8980 - School Psychology Doctoral Capstone Project (2 Credits)

The Capstone Project is a culminating component of the program. Production of a scholarly project that illustrates the student's understanding of relevant topics in school psychology, the scope of contemporary practice, and the various roles of the professional school psychologist. Prereq: SPSY 6911 and SPSY 6700. Restriction: Restricted to SPSY-PSYD majors within the School of Education and Human Development or consent of the instructor. Max hours: 2 Credits.

Grading Basis: Letter Grade with IP

Prereq: SPSY 6911 and SPSY 6700. Restriction: Restricted to SPSY-PSYD majors within the School of Education and Human Development.

Science Education (SCED)

SCED 5004 - Elementary Science Teaching (3 Credits)

This course explores issues in elementary school science learning and teaching. Teacher candidates will develop knowledge of the nature of science and science content, engage in scientific inquiry, work to identify student conceptions, and plan and enact science instruction. Cross-listed with SCED 4004. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: TCHR-MA plan or BMA subplan.

SCED 5050 - Introduction to Science Teaching and Learning (2 Credits)

Focus on conceptual development, conceptual change, collaborative learning, students' conceptions of various topics in science, practical issues encountered in facilitating learning, managing the classroom, formative and summative assessment, and differentiating instruction in a collaborative environment. Seminar for Learning Assistants. Student must be serving as a Learning Assistant in the CU Denver LA program. Max hours: 2 Credits.

Grading Basis: Letter Grade

SCED 5340 - Equity & Culture in Science Education: Local/Global (3 Credits)

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 4340 and ENVS 5340. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5350 - Issues and Trends in Science Education (3 Credits)

Explores the current issues and trends in science education related to theory, pedagogy, practices, curriculum, and other contemporary topics. Cross-listed with SCED 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5360 - Physics Teaching and Learning (3 Credits)

In this course, we will explore how people learn physics, and how physics is and can be taught. We will read literature in physics, physics education research, education, psychology, and cognitive science and apply it to your physics teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5365 - Physics Teaching as Research (3 Credits)

In this course, you will research your teaching of physics, with the explicit goals of improving your teaching practice and improving student learning of physics. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5400 - Theory and Pedagogy of Science Learning (3 Credits)

Examines current issues, strategies, materials, and technology related to the teaching and learning of science at the middle and secondary school levels. Science curriculum, teachers' pedagogical content knowledge, and research in science education are investigated. Cross-listed with SCED 4400. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SCED 5401 - Inquiry Science Pedagogy and Practices (3 Credits)

An in-depth study of inquiry science pedagogy and practices and how inquiry science supports standards-based education to make science accessible to ALL learners. The course provides a review of research on pedagogy and practices that support student understanding, problem solving and creativity through the use of inquiry science. Prereq: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with SCED 4401. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5416 - Math-Science Connections: Outdoor (3 Credits)

(Primarily for pre-secondary teachers.) Explores science concepts through outdoor activities appropriate for middle-grade students. Topics include how the nature of science and mathematics informs pedagogy, national and state standards, earth science and paleontology, orienteering and map usage, water analysis, astronomy and entomology. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5500 - The Nature of Science (3 Credits)

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 7500. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5540 - Foundations of School Health Education (3 Credits)

This course is an overview of the principles of behavior theory as they relate to health education in both theory and practice. The course will examine the characteristics of effective school-based health education programs. Issues of ethnicity, culture, and race as they relate to health will be examined throughout the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5550 - Curriculum Materials in Health Education (3 Credits)

This course will support the application of behavior theory as it applies to specific health content knowledge and skills. Special attention will be given to the skills, instructional strategies, and techniques needed to develop a culturally responsive classroom to promote success for all learners. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5560 - Health Education Teaching Practices (3 Credits)

The course provides an overview of health education teaching and learning strategies for use in school settings. Action research will be introduced and utilized as a method to examine current teaching practices. Role-play, student assessment development, differentiation of instruction, and culturally responsive classroom practices will be examined. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5650 - Environmental Education (3 Credits)

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Cross-listed with ENV 4650 and ENV 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5660 - Energy Education (3 Credits)

Explores current energy problems. Students examine such topics as fuels from plants, fuels from wastes, fossil fuels, nuclear energy, wind energy, geothermal energy, solar energy, and energy conservation. Includes demonstration of available educational resources for grades K-12. The purpose of the course is to make technical aspects of energy accessible to the lay person. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5670 - Experiential Learning In The Parks (3 Credits)

This course guides students through their experiences in a summer field placement, using readings, discussions and other interactive tools that focus on place-based education. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5690 - Curriculum Development in Place-Based Education (3 Credits)

Students in this course apply knowledge about place-based education in schools and communities for educational purposes. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5780 - Storytelling (1-4 Credits)

Explores the history, function, philosophy, and techniques of storytelling. This class also includes collecting, selecting, preparing, developing, and delivering stories. Research and resources are emphasized. Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SCED 5800 - Curriculum Workshop for Science Teachers (0.5-4 Credits)

Opportunity to work on curricular projects and problems in the schools. Explore various formal and informal learning environments such as study groups and after-school activities. Prereq: 18 semester hours in education and teaching experience or permission of instructor. Repeatable. Max Hours: 36 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 36.

SCED 5840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SCED 5920 - Readings in Elementary Education (1-4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade

SCED 5930 - Internship in Secondary Education (3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 5950 - Master's Thesis (1-8 Credits)

Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Additional Information: Report as Full Time.

SCED 6110 - Science and Math Curriculum Studies (3 Credits)

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Prereq: Graduate student status. Cross-listed with SCED 7110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

SCED 6120 - International Perspectives on the Curriculum (3 Credits)

Considers schooling patterns in the U.S., the U.K., Japan, Australia, and several European countries, examining different approaches to curriculum issues in relation to social, historical, and economic factors. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 6840 - Independent Study (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SCED 6950 - Master's Thesis (4 Credits)

Max hours: 4 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

SCED 6990 - Special Topics (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SCED 7110 - Science Math Curriculum Study (3 Credits)

Students examine frameworks for curriculum design, discuss the psychological and philosophical foundations of curricula, and analyze the curriculum that they use in their own teaching. Students synthesize what teachers must do in order to effectively implement curricula. Restriction: Graduate student status. Cross-listed with SCED 6110. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

SCED 7500 - The Nature of Science (3 Credits)

This course is a critical exploration of science and scientific knowledge using an epistemological approach to ask (and possibly answer) questions about sociological issues in science and implications for science research, teaching and learning. Cross-listed with SCED 5500. Max hours: 3 Credits.

Grading Basis: Letter Grade

SCED 7840 - Independent Study (1-3 Credits)

Max hours: 3 Credits.

Grading Basis: Letter Grade

Science, Technology, Engineering & Math Education (STME)

STME 5001 - Planning for Learning in Mathematics and Science (3 Credits)

This course explores aspects of complex curriculum and instructional concepts through the lens of mathematics and science educators. A focus will include: Socio-cultural learning theory in Math and Science; standards-based instruction; instructional design; formative & summative assessment, and differentiation so that meaningful instruction becomes accessible to all students. Cross-listed with STME 4001. Max hours: 3 Credits.

Grading Basis: Letter Grade

STME 5051 - STEM Capstone: Secondary Education (3 Credits)

This course provides Secondary STEM Education students with a capstone learning experience that integrates knowledge of STEM content, students, and school context into socially-just and culturally responsive practices. Cross-listed with STME 4051. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

Social Justice (SJUS)

SJUS 5050 - Special Topics: Social Justice (3 Credits)

Special Topics in Social Justice will be covered. Cross-listed with SJUS 4050. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

SJUS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Social Sciences (SSCI)

SSCI 5000 - 19th and 20th Century Continental Philosophy (3 Credits)

A seminar on key problems and thinkers in the nineteenth & twentieth century continental philosophical traditions and their contemporary significance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. PHIL 3002 or PHIL 3022 are strongly recommended preparation for optimal student success. Cross-listed with PHIL 4000/5000 and HUMN 5000. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5013 - Methods and Practices of Graduate Interdisciplinary Humanities (3 Credits)

The second of three required Master of Humanities core courses, this course introduces beginning graduate students to methodologies and intellectual frameworks for gathering, organizing, and developing interdisciplinary research. Focus is on the application of theories and methods of research, interpretation and analysis in humanistic research through readings that explore philosophical and cultural discourses have altered theory and method. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN/PHIL 5013. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

SSCI 5020 - Foundations and Theories of Interdisciplinary Social Science (3 Credits)

The first of the Master of Social Science core courses, this course exposes beginning graduate student to critical, key analytic models, and their application in disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.) for the purpose of graduate-level interdisciplinary social science research. Course note: Students must repeat this course if they earn a C+ or lower and must have permission from the instructor to repeat the course. Students will only earn 3 credits for this course, even if they must repeat it. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Cross-listed with HUMN 5020 and PHIL 5020. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5023 - Research Perspectives in Social Science (3 Credits)

Introduces interdisciplinary social research through a critical examination of various methodological approaches. Each student formulates a research proposal which includes a research question, a review of the literature, and methods of study. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: spring, fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SSCI 5025 - Foundations and Theories of Interdisciplinary Humanities (3 Credits)

Exposes the beginning graduate student to exemplary works and methodologies of disciplines oriented to humanities and social sciences, such as philosophy, sociology, history, communication, fine arts, and literature. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5025. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5050 - Topics in Social Science (1-3 Credits)

These topic seminars are concerned with specialized aspects of the social sciences from various theoretical and research perspectives. These courses are interdisciplinary and serve as a forum for discussion of individual projects and theses. Restriction: Restricted to Graduate and Graduate Non-Degree majors (NDGR-NHL and NDGR-NLA). Term offered: fall, spring. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5101 - Pragmatism: Classical American Philosophy (3 Credits)

The most significant philosophical tradition born in the United States is pragmatism. Examines several of the most important classical works of this tradition, the influence of thinkers who have helped pragmatism, and the contemporary relevance of this tradition. Figures who may be included in this course are: Emerson, Pierce, Royce, James, Dewey, Mead, Rorty. Restriction: Restricted to Graduate and Graduate Non-Degree majors. An introductory course in philosophy is strongly recommended for optimal success. Cross-listed with PHIL 4101, 5101, HUMN 5101. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5242 - Bioethics (3 Credits)

Examines some of the major moral issues confronting the nation's health care system. The class will search for solutions to such problems as financing health care for those unable to do so on their own, determining the extent of a patient's right to both refuse and demand certain types of medical treatment, and allocating scarce medical resources such as life-saving vital organs. The springboard for examining these issues will be the doctor or patient relationship framed by the moral principles of respect for persons and beneficence. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4242, PHIL 5242, HUMN 5242. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5251 - Introduction to Legal Studies (3 Credits)

A survey of the United States legal system, including lawmaking powers, jurisdiction, court procedures, professional ethics and major principles of business law, contracts, estates and probate, family law, property and torts. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SSCI 4251/HUMN 4251/HUMN 5251. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5325 - First Amendment: Theory and Context (3 Credits)

First Amendment jurisprudence including free speech/responsibility, sedition/seditious libel/dissent, prior restraints, time/place/manner restrictions, hate/intimidating speech, defamation, privacy/security tensions, intellectual property/public good, advertising, corporate speech, sexual expression, and public status of religion. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 4325, HUMN 5325, SSCI 4325, PSCI 4325 and PSCI 5325. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5530 - Social Construction of the Self (3 Credits)

Investigates theories that address the construction of self and how that construction is constrained by culture, politics, society and historical moment. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5540 - Law, Diversity and Community in United States History (3 Credits)

Engaging extensive primary and secondary source material, course applies an interdisciplinary approach to diversity and conflict that often surrounds the quest for economic, moral and social inclusion in the United States. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5540. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5600 - Philosophy of Religion (3 Credits)

Nature of religion and methods of studying it. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5600, PHIL 4600, 5600, RLST 4060, and 5060. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5650 - Reflections on Modernity (3 Credits)

Explores modernity as a historical epoch and a theoretical space, looking at the commentaries and reflections of influential 20th century thinkers including Adorno, Arendt, Levinas, Merleau-Ponty, Habermas and Foucault. Examines how the theoretical inclinations of modernity were influenced by politics, art, literature and culture. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5650 and PHIL 5650. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5720 - Sexuality, Gender and Their Visual Representation (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5720 and WGST 5720. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5770 - Imperialism, Post-Colonial Theory, Visual Discourse (3 Credits)

Western empires disseminate political, social, economic & cultural practices through complex interplay of cultural practices. Visual production is a complex site for meaning making within imperialism. Examines how visual discourses operated to create meaning for audiences, through focus on postcolonial critique. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HUMN 5770. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5833 - Existentialism (3 Credits)

Examines one of the most influential movements in recent European thought, beginning with existentialism's 19th century roots, and continuing on to the existentialist philosophers of the 20th century. Figures covered may include Dostoyevsky, Kierkegaard, Nietzsche, Heidegger, Sartre and de Beauvoir. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4833/5833 and HUMN 5833. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5840 - Independent Study: SSCI (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SSCI 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SSCI 5920 - Philosophy of Media and Technology (3 Credits)

A philosophical examination of interrelationships between contemporary media, technology, and their impacts upon character of contemporary life and values. Topics may include ethics, epistemology, democracy, advertising, media literacy and criticism. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4920, 5920, HUMN 5920. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues—such as *Lysis*, *Symposium* and *Republic*—and then by reading texts from Sigmund Freud, Michael Foucault and others. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with PHIL 4933, WGST 4933/5933 and HUMN 5933. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SSCI 6010 - Methods and Theories of Feminism and Gender Studies (3 Credits)

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with WGST 6010 and HUMN 6010. Term offered: fall, spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SSCI 6950 - Master's Thesis (1-8 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 8 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 8.
Additional Information: Report as Full Time.

SSCI 6960 - Master's Project or Report (1-6 Credits)

Research which may be based on field work. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Term offered: fall, spring, summer. Repeatable. Max hours: 9 Credits.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 9.
Additional Information: Report as Full Time.

Sociology (SOCY)

SOCY 5000 - Professional Seminar: Sociological Inquiry (3 Credits)

Introduces sociology graduate students to sociology as a discipline and profession. Conveys practical skills and knowledge useful to the pursuit of a graduate degree. Introduces students to sociology graduate faculty members and their research interests. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5016 - Social Theory (3 Credits)

An overview of major theories across the social behavioral sciences examining social order, integration, conflict, and change. The course emphasizes a cross disciplinary approach, highlighting works of historical and contemporary relevance. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5020 - Race, Culture and Immigration (3 Credits)

In this course, we will consider the social and legal construction of race and immigration. We will also explore how immigrants have been racialized both historically and in the current moment. In addition, we will consider the role of culture in shaping the immigrant experience and immigrant outcomes. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4020, ETST 4020 and ETST 5020. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5024 - Seminar: Research Methods I (3 Credits)

Problems and procedures in research design, data collection and processing. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5050 - Health Disparities (3 Credits)

This course focuses on social, economic, and political factors that shape the uneven distribution of health and illness in the United States. Social determinants of health are explored, including socioeconomic status, race and ethnicity, neighborhood environments, social relationships, and gender. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4050. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5110 - Sociology of Health Care (3 Credits)

Examines U.S. health care institutions and issues such as rising costs, the effects of class, racial and gender inequality, professionalization and monopolization of roles, construction of illness and health, managed care, for-profit health care, and ethics of health care decisions. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4110. Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5183 - Seminar: Quantitative Data Analysis (3 Credits)

A research-oriented seminar stressing the utilization of social data already collected in the test or generation of sociological theory. Note: Required for M.A. graduate students in sociology. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5193 - Seminar: Qualitative Data Analysis (3 Credits)

Develops skills for designing studies, collecting and analyzing data, and evaluating qualitative research. Concentrates on ethnography, in-depth interviewing, and content analysis. Students read examples of qualitative research and about the process of qualitative research, as well as conducting independent research. Note: Required for M.A. graduate students in sociology. Prereq: graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5220 - Population Change and Analysis (3 Credits)

Concepts of population change, methods of analysis, and applications to contemporary social issues. Topics include age and sex distributions, fertility, mortality, and migration, and the social causes and consequences of these phenomena. Cross-listed with SOCY 4220.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5270 - Socl Meanings of Reproduction (3 Credits)

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4270, WGST 4270 and WGST 5270. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5290 - Aging, Society and Social Policy (3 Credits)

A sociological examination of central issues (e.g., work, retirement, family support, health) pertaining to the aging population. Heterogeneity in aging, as shaped by gender, race, ethnicity and social class is addressed, as well as policies pertaining to the adult population. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4290. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5440 - Poverty and Social Inequality (3 Credits)

Investigates the distribution of wealth, income, and economic power in the United States with a focus on social institutions and factors that shape inequality. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4440. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5460 - Hate Groups and Group Violence (3 Credits)

Social sciences help us understand the phenomena of hate groups and group violence and contribute toward their elimination. Examples are examined using theoretical perspectives on different levels of analysis and within different areas of research. Cross-listed with SOCY 4460.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5475 - Self and Identity (3 Credits)

A course in social psychology focusing on individuals in social interaction. Focuses of self-conception, identity, presentation of self, and self and emotion management. Examines major theories and research in social psychology. Prereq: Graduate standing. Cross-listed with SOCY 4475. Term offered: summer. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Summer.

SOCY 5550 - Seminar: Sociology of the Family (3 Credits)

An intensive review and analysis of the family as a social institution.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5590 - Crime, Justice, and the City (3 Credits)

In this course, we will ask why inequality, crime, and police are unevenly spread across cities. We will examine why crime varies by neighborhood, whether place-based policing is racially biased, and why prisons are filled with people from just a few zip codes. We will study racial and economic segregation, gentrification, white flight, and suburbanization in the context of criminal justice. Spatial analysis is a growing field combining geography, sociology, and criminology. We will study it by reading cutting-edge researchers who use mapping, interviews, statistical analysis, and ethnography. Restriction: Restricted to Graduate and Graduate Non-degree majors. Cross-listed with SOCY 4590. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5610 - Sociology of Religion (3 Credits)

This course introduces students to the nature and functions of religion in society, emphasizing western religions in the U.S. Students will develop and apply an understanding of classic and modern sociological theories of religion to current events and disciplinary developments. Cross-listed with SOCY 4610, RLST 4020, RLST 5020. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5640 - Sociology of Childhood and Adolescence (3 Credits)

An in-depth overview of the theories and research regarding the life course understanding of infancy, childhood and adolescence. Children's lives and cultures in relation to adults and their transition from childhood to adolescence are studied. Cross-listed with SOCY 4640. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5650 - Sociology of Adulthood and Aging (3 Credits)

Examination of the adult life course—post-adolescence to death, focusing on key social transitions of adulthood (e.g., independence from parents, marriage, retirement), and historical, institutional, and social factors that create variation in their timing, meaning, and individuals' role experiences. Cross-listed with SOCY 4650. Prereq: Graduate standing. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5660 - Seminar: Social Psychology (3 Credits)

Sociological approaches to the study of the self, role theory, persons in situations, identifications, socialization, and other characteristics of persons in society. Prereq: Graduate standing. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5690 - Crime and Inequality Over the Life Course (3 Credits)

Life-course perspective on inequality and crime. Studies transitions, trajectories and turning points as key features of the life course. Considers how inequalities and criminal behavior are shaped by timing of experiences, historical and geographic contexts, others' lives, and human agency. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Cross-listed with SOCY 4690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5740 - Courts & Society (3 Credits)

Courts are a centerpiece of modern legal systems that mediate social relationships and people's relationship to the state. This course explores the connection between courts and democratic society by considering the operation and evolution of courts in the U.S. Cross-listed with SOCY 4740. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5750 - Seminar: Criminology (3 Credits)

An intensive review and analysis of the literature and research dealing with sociology of crime in modern society. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5770 - Advanced Topics in Sociology (1-3 Credits)

Advanced study of special topics in sociology to be selected by the instructor. Note: May be repeated for credit when topics vary. Cross-listed with SOCY 4770. Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA). Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors or undergraduate students in the Sociology Bachelor's to Master's program (SOCI-BA-BMA)

SOCY 5780 - Violence in Relationships (3 Credits)

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Prereq: Graduate standing. Cross-listed with SOCY 4780, WGST 4780 and WGST 5780. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

SOCY 5840 - Independent Study: SOCY (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: Graduate standing. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SOCY 5955 - Master's Thesis (1-6 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

SOCY 5964 - Master's Report (1-3 Credits)

Prereq: Graduate standing. Term offered: fall, spring, summer.

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

SOCY 5995 - Global Study Topics (3-6 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Department consent required. Repeatable. Max hours: 12 Credits

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Spanish (SPAN)

SPAN 5000 - Introduction to Graduate Studies in Spanish (3 Credits)
Introduces critical methodologies and critical perspectives of practices of signification such as literature and film, among others, in the context of culture and history. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

SPAN 5010 - History of the Spanish Language (3 Credits)
Studies the history of the Spanish language, both internal and external, from the language's Latin roots to the present. Historical phonetics are emphasized, though all features of the language are discussed. Prereq: Graduate standing. Cross-listed with SPAN 4010. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5020 - Spanish Sociolinguistics (3 Credits)
Studies the Spanish language in its social context. In addition to specific regional linguistic features, social factors such as geography, social class, politics, race, gender, economics, education and history are discussed as determiners of the linguistic landscape. Prereq: Graduate standing. Cross-listed with SPAN 4020. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5030 - The Learning and Teaching of Heritage Speakers (3 Credits)
Studies Spanish heritage speakers, including characteristics of how they learn and how best to teach them. Includes definitions of heritage speakers, strengths and weaknesses in learning Spanish, and attitudes of and towards heritage speakers in the classroom. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4030. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5040 - Spanish Classroom Methods and Practice (3 Credits)
Focuses on the second language learning and teaching of Spanish in a classroom context. Looks at topics including second language vocabulary, pronunciation, grammar, and types of feed back. Practical component of activity design and learning/teaching strategies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4040. Term offered: spring. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

SPAN 5060 - Dialects of the Spanish-Speaking World (3 Credits)
Studies the geography of the Spanish language in those countries where it is spoken as a primary language. Includes a comparison of dialect features and a study of factors that contribute to the diversity of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4060. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5070 - Spanish Applied Linguistics & Second Language Acquisition (3 Credits)

This course is a survey of various areas of the field of linguistics in general (e.g. morphology, syntax, semantics, pragmatics, etc.) as well as specific aspects of the structure (and acquisition) of the Spanish language. Prereq: Graduate standing. Cross-listed with SPAN 4070. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5076 - Spanish in Colorado (3 Credits)
A study of the Spanish language in its social context in Colorado and New Mexico. We will study historical factors as well as current social factors that contribute to the use of the Spanish language in this region. Prereq: Graduate standing. Cross-listed with SPAN 4076. Term offered: summer. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Summer.

SPAN 5080 - Spanish in the United States (3 Credits)
A study of the Spanish language in its social context as a language of the United States. In addition to studying bilingualism and language traits, factors such as race, gender, class, education, nationality, age, generation and language attitudes are considered. Prereq: Graduate standing. Cross-listed with SPAN 4080. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5099 - Special Topics in Linguistics (3 Credits)
Varying topics in Hispanic language and literature not otherwise covered by regular courses. Note: May be taken more than once provided that the topics are different each time. Prereq: graduate standing. Cross-listed with SPAN 4099. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5110 - Contemporary Spanish Literature (3 Credits)
Major works published since the Spanish Civil War, which ended in 1939. Prereq: Graduate standing. Cross-listed with SPAN 4110. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5130 - Medieval Spanish Literature (3 Credits)
Examines Spanish literature from the jarchas and the Cid through the Celestina in the context of the reconquest. Considers the construction of the Christian knight as a hero and the corresponding representations of women, Jews and Muslims. Prereq: Graduate standing. Cross-listed with SPAN 4130. Term offered: spring, fall. Max hours: 3 Credits.
Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5150 - Masterpieces of Spanish Literature (3 Credits)

The most enduring works in the literature of Spain across the centuries.

Prereq: Graduate standing. Cross-listed with SPAN 4150. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5170 - Golden Age Drama (3 Credits)

Spanish drama of the 16th and 17th centuries, the period of greatest dramatic productivity in the nation's history. Readings include selections from Lope de Vega, Tirso de Molina, Calderon de La Barca, and others.

Prereq: graduate standing. Cross-listed with SPAN 4170. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5180 - Modernism (3 Credits)

Examines the first real flowering of Spanish American literature, from about 1880 to 1910. The dominant genres of the period were the short story, the essay, and lyric poetry. Readings come from Dario, Jose Enrique Rodo, Manuel Gutierrez Najera, Manuel Diaz Rodriquez and others.

Prereq: graduate standing. Cross-listed with SPAN 4180. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5190 - Nineteenth-Century Spanish Novel (3 Credits)

The Spanish novel in one of its most productive periods, beginning with romanticism and carrying through the realist and naturalist movements.

Prereq: graduate standing. Cross-listed with SPAN 4190. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5300 - Generation of 1898 (3 Credits)

Spanish literature from around the turn of the century through the first third of the 20th century, reflecting the deep intellectual and cultural foment occasioned in part by Spain's loss of the Spanish-American War of 1898. Prereq: Graduate standing. Cross-listed with SPAN 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5320 - Interculturalism and Transnationalism in Modern Spain (3 Credits)

Students will examine experiences of Spaniards living in different parts of the world and the circumstances of either foreigners or migrants living in Spain, through their visual and literary texts, film, photographs, documentaries and other products of current popular culture, such as contemporary television. Prereq: Graduate standing. Cross-listed with SPAN 4320. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5330 - Modern Culture of Spain through Film and Narrative (3 Credits)

Culture of modern Spain studied through Spanish film. The death of military dictator Francisco Franco opened the process for the recuperation of a usurped democratic, representational system that has become the basis of a cultural and economic resurgence. Taught in Spanish. Prereq: graduate standing. Cross-listed with SPAN 4330. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5340 - Race, Class, and Gender in Spanish Golden Age Literature (3 Credits)

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq: graduate standing. Cross-listed with SPAN 4340 and WGST 4540/5540. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5350 - Don Quijote (3 Credits)

The complete Don Quijote in Spanish, focusing on its historical, social, and philosophic context, and its role in the emergence of the modern novel. Prereq: graduate standing. Cross-listed with SPAN 4350. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5360 - Women and the Spanish Civil War (3 Credits)

Focuses on the role of Spanish women during the Second Republic, the Civil War, the dark & starving postwar, & the inescapable exile that was a consequence of the conflict. Discusses several texts & films that portray this silenced odyssey, as well as historical, ideological & cultural documents of critical value & significance. Cross-listed with SPAN 4360. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPAN 5380 - Romanticism in Spain (3 Credits)

The romantic movement in 19th century Spain through plays, poems, essays. Prereq: graduate standing. Cross-listed with SPAN 4380. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5399 - Special Topics: Spanish Peninsular Literature (3 Credits)

Varying topics in Spanish peninsular literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

SPAN 5401 - Survey of Spanish-American Literature I: Pre-1898 (3 Credits)

The most important works in the literature of Spanish America from the Colonial Period to the Late 19th Century. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SPAN 4401. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5411 - Contemporary Spanish-American Novel (3 Credits)

The novel in Spanish America since the Second World War, the period in which the greatest number and quality of works has been produced. Prereq: graduate standing. Cross-listed with SPAN 4411. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5450 - Masterpieces of Spanish-American Literature (3 Credits)

Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Prereq: graduate standing. Cross-listed with SPAN 4450. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5501 - Borges: An Introduction to His Labyrinths (3 Credits)

The works of Jorge Luis Borges (short stories, essays, poetry, translations, essays anthologies, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4501. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5512 - Contemporary Argentine Short Stories (3 Credits)

The short stories by extraordinary Argentine writers, such as Jorge Luis Borges, Silvina Ocampo, Julio Cortazar, Griselda Gambaro, Adolfo Bioy Casares, and Manuel Muica Laineza, among others, will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4512. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5521 - Mexican Literature I: pre-Columbian and Colonial (3 Credits)

Survey of Mexican literature and culture from pre-Columbian times to the colonial era. Prereq: graduate standing. Cross-listed with SPAN 4521. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5522 - Mexican Literature II: 19th to 21st Centuries (3 Credits)

Survey of Mexican literature and culture from the early modern to contemporary literature. Prereq: graduate standing. Cross-listed with SPAN 4522. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5525 - Orientalisms In The Hispanic Traditions (3 Credits)

Advanced studies of orientalism in the Hispanic tradition: the Hispano-Arabic cultural heritage in Early Medieval Spain and in contemporary Hispanic cultures, as well as the influence of other eastern religions and cultures, such as Judaism or Buddhism. Prereq: graduate standing. Cross-listed with SPAN 4525. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5541 - Unexpected Lives: Ibero-American Queer Cinema (3 Credits)

Provocative films, by courageous Ibero-American filmmakers, on controversial topics (homosexuality, Lesbianism, bisexuality, transgender individuals, feminism, etc.) will be studied to teach students to think globally as well as critically about LGBTQ individuals in the context of Ibero-American cultures. Prereq: graduate standing. Cross-listed with SPAN 4541. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5550 - Garcia Marquez: Words of Magic (3 Credits)

The works of Gabriel Garcia Marquez (stories, short novels, novels, newspaper articles, interviews, lectures) will be studied with the goals of teaching students to think globally as well as critically about literature and other cultures. Prereq: graduate standing. Cross-listed with SPAN 4550. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5590 - Ibero-American Thought (3 Credits)

The course examines philosophical works by essayists, literary critics, and cultural thinkers from Spanish-American countries and the Iberian Peninsula. Besides reading philosophical works in their original form, students will read scholarly commentaries to deepen their understanding of those works. Prereq: graduate standing. Cross-listed with SPAN 4590. Term offered: spring, fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5599 - Special Topics: Latin American Literature (3 Credits)

Varying topics in Latin American literature not otherwise covered by regular courses. Note: May be taken more than once, provided that the topic is different each time. Prereq: graduate standing. Term offered: spring, fall. Repeatable. Max Hours: 6 hours.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

SPAN 5600 - Seminar in Spanish Creative Writing: Poetry and Short Fiction (3 Credits)

A capstone writing course. Semester writing project will be collected poems and short stories. Prereq: graduate standing. Cross-listed with SPAN 4600. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

SPAN 5690 - Methods of Teaching Modern Languages (3 Credits)

Studies the methods and practices of teaching modern languages. Note: requirement for those wishing to be teaching assistants in the Department of Modern Languages, and for language majors in the teacher certification program, School of Education, CU Denver. This course is taught in English and does not fulfill the foreign language proficiency requirement for the College of Liberal Arts and Sciences. Cross-listed with MLNG 4690, MLNG 5690, SPAN 4690, FREN 4690, FREN 5690, GRMN 4690, GRMN 5690, CHIN 4690, CHIN 5690. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Typically Offered: Fall.

SPAN 5691 - Methods of Teaching Modern Languages II (3 Credits)

A continuation of the study of modern language teaching methods.

This second course has an emphasis on experiential learning through individual teaching demonstrations, class observations, as well as team teaching with experienced instructors. Cross-listed with MLNG 4691, MLNG 5691, SPAN 4691, FREN 4691, FREN 5691, GRMN 4691, GRMN 5691, CHIN 4691, CHIN 5691. Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: MLNG 5690 or SPAN 5690 or FREN 5690 or GRMN 5690 or CHIN 5690

Typically Offered: Spring.

SPAN 5840 - Independent Study: SPAN (1-3 Credits)

Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

SPAN 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPAN 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPAN 5950 - Master's Thesis (1-6 Credits)

This course is for students writing a master's thesis. It includes individual mentoring with one or more faculty members, individualized and library-based research. May also include field research. Students must consult with a faculty member before enrolling. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Additional Information: Report as Full Time.

SPAN 5970 - Special Topics in Literature (3 Credits)

Varying topics in Hispanic literature not otherwise covered by regular courses. Prereq: Graduate standing. Cross-listed with SPAN 4970. Term offered: spring, fall. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring.

Special Education (SPED)

SPED 5000 - Universal Design for Learning (UDL) (3 Credits)

This course introduces Universal Design for Learning (UDL), an important educational philosophy and set of principles & techniques that focuses on strategies and tools to help ALL students by accommodating their differences in inclusive classroom settings. Cross-listed with SPED 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5010 - Intentional Interventions for Exceptional Learners (3 Credits)

This course provides instructional strategies and interventions for students with a wide variety of disabilities. Implications for targeted and intensive interventions and assessment are considered. Cross-listed with SPED 4010. Max hours: 3 Credits

Grading Basis: Letter Grade

SPED 5030 - Understanding (dis)Ability in Contemporary Classrooms (3 Credits)

This course provides an overview of special education by examining the history of special education, construction of dis/ability, characteristics of individuals with disabilities, aspects of disproportionality, and introduction to evidence-based instructional practices. Cross-listed with SPED 4030. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5050 - Assessment & Advocacy for Multilingual Learners (3 Credits)

Students learn to gather and use assessment results within a strengths-based framework to advocate for appropriate programming, placement, instruction, and ongoing progress monitoring of multilingual students.

Special attention is paid to linguistic and cultural bias in the field of assessment. Cross-listed with CLDE 5050. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5120 - Negotiating The Special Education Teaching Process (3 Credits)

This course explores both theoretical and practical aspects of educating students with special needs. Students will examine the nature of disability, the history and legal basis for special education programming in American schools, as well as contemporary law governing the education of persons with disabilities. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5140 - Assessment: Inquiry, Instruction, & Intervention (3 Credits)

Using a variety of assessment tools, students will focus on the educational assessment methods and procedures used in decision making and program planning for students with exceptional learning needs, with attention to pervasive issues pertaining to students from culturally and linguistically diverse backgrounds. Cross-listed with SPED 4140. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5151 - Slashing Stigmas: Promoting Positive Behaviors (3 Credits)

This course works to transform perspectives and practices related to supporting student behavior in classrooms. Students will learn important considerations related to culture, race, gender and socioeconomic status, as they intersect with behavior and social emotional development. Cross-listed with SPED 4151. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5210 - Foundations for Understanding Behavior (3 Credits)

This course is designed to provide a foundational understanding of behaviors commonly witnessed in the classroom. It will provide strategies for assessment and guidance on legal processes which guide the development of individualized education and behavior plans. Specialize instructional methods and current events impacting the social emotional educations of students will also be discussed. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5300 - Family, Professional, and Community Collaboration (3 Credits)

Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance a teacher's ability to work and communicate effectively with school personnel, including paraprofessionals and parents. The goal of collaboration is to support and determine together the instructional scenarios that best meet the needs of students. Specific competencies include problem solving, conflict resolution, data collection or observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Cross-listed with SPED 4300. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5401 - Advanced Seminar in Special Education (3 Credits)

Designed to allow an opportunity for special educators to compare and contrast the service delivery, funding mechanisms, professional ethics, and underlying assumptions of special and regular education. Trends in the field of special education are examined through review of current research. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5440 - Ethics and Implementation ABA (3 Credits)

This course is designed to teach you ethical and professional conduct considerations in applied behavior analysis. We will review behavior change systems and implementation issues in the conduct of applied behavior analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5450 - Introduction to ABA and Terminology (3 Credits)

This course will introduce the history and basics of ABA with a focus on its related terminology. In addition, ABA benefits will be discussed, and emphasis placed on ethical considerations required for practicing ABA as a board Certified Behavior Analyst. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5460 - ABA Practical Applications (3 Credits)

This course will provide a framework for the natural science of behavior. It will provide students with a systematic approach to understanding and precisely describing the behavior of individuals, and its relationship to environmental determinants. Prereq: SPED 5450. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5470 - ABA Data (3 Credits)

This course will introduce how to collect and interpret different types of data, and the importance of making data-driven decisions for behavior change procedures based on functional relationships. Prereq: SPED 5450, 5460. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5480 - ABA Advanced Data and Behavioral Plans and Applications (3 Credits)

Student will learn to use standard celeration charts and make data-driven decisions to write appropriate behavioral plans. They will also learn to use ABA strategies to enhance communication, to support individuals with ASD, and to benefit from systems supports. Prereq: SPED 5450, 5460, 5470. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5490 - Autism In Early Intervention (3 Credits)

This course will provide students with the knowledge necessary to implement recommended, evidence-based practices with young children with autism. The course will provide information on the etiology of autism, diagnostic procedures, evidence-based practices, and how to support families who have a young child diagnosed on the spectrum. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5495 - Advanced Topics in Applied Behavior Analysis (3 Credits)

Students will learn how to apply basic behavioral principles to either novel client populations or using nuanced behavioral theories, like behavioral momentum theory or behavior economics. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5500 - Transition and Secondary Methods in Special Education (3 Credits)

This course provides school leaders and practitioner with an understanding of the special education transition process as specified by federal and state guidelines, as well as effective teaching and learning strategies for secondary youth with disabilities. Cross-listed with SPED 4500. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5530 - Language & Literacy Acquisition Div Lrn (3 Credits)

This course investigates the relationship between language and literacy acquisition. In the context of first and second language acquisition across the lifespan, the course focuses on bilingual and second language development, and on the acquisition of literacy by young children. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5600 - Special Education Law: Ethics and Compliance (3 Credits)

Designed for school leaders and professionals to understand special education law and compare and contrast service delivery options. Cross-listed with SPED 4600. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5740 - Intersections of Literacy, Culture, & Exceptionality (3 Credits)

This course provides a foundational understanding of the complex intersections between literacy, culture, language, learning, and students with (dis)abilities. A primary goal is to address the particular needs of culturally and linguistically diverse learners with exceptionalities, while also exploring the distinctions between language development and learning disabilities. Cross-listed with SPED 4740. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5780 - Literacy Intervention for Exceptional Learners (3 Credits)

Provides the practitioner with an understanding of research-validated approaches, strategies, assessment tools and issues related to effective literacy instruction for students performing significantly below grade level. Practitioners can expect to be able to conduct thorough literacy assessments as well as be able to develop, implement, and evaluate individual reading and writing programs for individual students with the most challenging literacy needs. Cross-listed with SPED 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

SPED 5835 - Special Topics (1-6 Credits)

Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

SPED 5840 - Independent Study: SPED (1-4 Credits)

Repeatable. Max Hours: 4 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 4.

SPED 5918 - ABA Practicum (1 Credit)

The purpose of this practicum is to provide additional learning opportunities in the areas of working directly with clients / consumers, implementing evidence-based treatments to address behaviors of social significance, implementing treatment plans, and monitoring and analyzing data to make data-based decisions. Students must complete 1000 hours to meet BCBA requirements and 670 hours for BCaBA requirements. 100 hours is equivalent to 1 credit. Max hours: 10 Credits. Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 10.

SPED 5919 - ABA Intensive Practicum (0.5-5 Credits)

Supervised field experience with a Board Certified Behavior Analyst for time spent directly working with individuals who require behavioral support. Students must complete 750 hours to meet BCBA requirements and 500 hours for BCaBA requirements. 75 hours is equivalent to 1 credit. Repeatable. Max Hours: 9 Credits.
Grading Basis: Pass/Fail Only
Repeatable. Max Credits: 9.

SPED 5930 - Special Education Generalist Internship and Site Seminar I (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Max hours: 2 Credits.

Grading Basis: Letter Grade

SPED 5931 - Special Education Generalist Internship and Site Seminar II (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 5932 - Special Education Generalist Internship and Site Seminar III (2 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teacher candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 5933 - Special Education Generalist Internship and Site Seminar IV (3-8 Credits)

Special education teacher candidates engage in systematic observation of, participation in, design of and reflection on inclusive curricular, instruction and management practices. Graduated learning activities for each internship and time requirements are specified in the School Internship handbook and the Special Education Guidelines. In partner school, the site coordinator and site professor are responsible for coaching, supervision and site seminars. In internship outside partner school settings, cooperating teachers, district coordinators and/or university professors work with teachers, and candidates in the classroom and in seminars. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

SPED 7840 - Independent Study: SPED (1-6 Credits)

Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Sustainability (SUST)

SUST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Taxation (MTAX)

MTAX 6405 - Taxation of Property Transactions (3 Credits)

This course focuses on the fundamental concepts regarding the taxation of transactions involving property, including concepts such as basis of property, realization and recognition of gain or loss, effects of taxing gains and losses from capital assets, depreciable status, amortization of intangible property, depreciation methods, property casualties and losses, limitations on passive losses, and non-recognition transactions. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6415 - Employment Taxes and Related Topics (1 Credit)

This course explores existing employment tax risks and employment tax planning opportunities through appropriate compensation and entity structuring techniques, analyzes proper worker classification, and highlights preventive techniques to avoid personal liability. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 1 Credit.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6420 - Estate and Gift Taxes (3 Credits)

This course is an introduction to principles and practices associated with the taxation of estates, gifts, and other gratuitous transfers under Subtitle B of the Internal Revenue Code. Using relevant examples, this course also focuses on the practical aspects of completing IRS Form 706, United States Estate (and Generation-Skipping Transfer) Tax Return, and IRS Form 709, United States Gift (and Generation-Skipping Transfer) Tax Return. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

Typically Offered: Spring.

MTAX 6425 - Taxation of S Corporations and Their Shareholders (3 Credits)

This course focuses on fundamental tax issues relating to S corporations and their shareholders arising from the formation, operation, and liquidation of S corporations. Course work includes an examination of pertinent federal income tax returns of a S corporation. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6430 - International Taxation (3 Credits)

International taxation focuses on the U.S. taxation of cross-border transactions. A review of the Internal Revenue Code's basic international tax rules is covered, including residency rules, sourcing of income and expenses, taxation of in-bound transactions (FDAP and "effectively connected income" rules), overview of U.S. model tax treaty provisions, anti-deferral regimes, and foreign tax credits. Students are often required to study the tax regimes of another country to compare and contrast foreign tax laws to U.S. laws. A brief review of interest-charge domestic international sales corporations is often covered. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

Typically Offered: Summer.

MTAX 6431 - Inbound International Taxation (3 Credits)

An inbound transaction deals with a foreign person (e.g., a foreign individual, partnership, or corporation) doing business in the U.S. This course begins by discussing that a foreign person is taxed on two types of U.S. income: (1) FDAP (generally, investment income) and (2) effectively connected income (business income). FDAP includes a foreign person investing in marketable securities, as well as key planning issues when a foreign person invests in U.S. real estate. The effectively connected income discussion includes the branch profits tax. Planning opportunities such as avoiding U.S. income tax when a foreign person exports goods into the U.S.; choice of U.S. business entity; and structuring U.S. business entities between different foreign tax systems (world-wide taxation by the foreign country or territorial taxation by the foreign country) are also presented. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6432 - Outbound International Taxation (3 Credits)

Outbound international taxation addresses U.S. tax issues when a U.S. person (e.g., U.S. individual, partnership, or corporation) is investing or doing business abroad. For U.S. individuals working abroad, this course covers the foreign income exclusion and the housing exclusion. The foreign tax credit protects both the U.S. individual or business from double taxation, but only if correctly structured when dealing with closely held U.S. businesses. From a business perspective, the deferral aspects of a foreign corporation are covered, as well as the anti-deferral regimes of (1) a controlled foreign corporation with subpart F income and (2) the passive foreign income company (PFIC). Planning issues such as creating foreign source income, corporate reorganizations under IRC § 367 are also discussed. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6435 - Income Tax Accounting and Methods (3 Credits)

Topics in this course include the adoption of and change in accounting periods; income recognition and deduction allowance under the cash and accrual methods of accounting; the time value of money and original interest discount rules; prepaid and contested income and expenses; income and deduction reversals; accounting method changes; installment sales; long-term contracts; inventory accounting, including LIFO, FIFO and manufacturers' inventories; and net operating losses.

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6440 - Tax Practice and Procedures (3 Credits)

This course provides a study of the organization, policies, and procedures of federal and state taxing authorities. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6445 - Entrepreneurs' Tax and Finance (3 Credits)

This course focuses on entrepreneurs and start-ups. Topics include choice of entity considerations regarding the proper business entity for conducting the new venture, tax efficient ways of raising capital, incentivizing employees, planning for retirement, and taking a successful company public. This course provides students with the tools and background to make intelligent, thoughtful decisions regarding tax and finance issues impacting the formation, operation, funding, and expansion of entrepreneurial ventures. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6455 - Tax Aspects Relating to Exempt Organizations (3 Credits)

This course focuses on the statutory exemptions for "charities" and other entities organized under IRC section 501(c). It also addresses the political campaign activities, funds, and lobbying activities of political organizations and entities organized under IRC section 501(c); the "prohibited transactions" rules; private foundations; the "unrelated business income" tax; the dissolution of, and distribution of assets held by, exempt organizations; and the charitable contribution. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6460 - Advance Topics in Taxation (3 Credits)

This course focuses on a variety of advanced tax topics for businesses and individuals. This course is offered on an infrequent basis. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6465 - State and Local Taxation (3 Credits)

This course focuses on various state and local taxation issues, such as the constitutionality of certain state and local tax regimes; nexus or jurisdictional tax due process; allocation and apportionment formulae under various state and local tax regimes; business versus nonbusiness income; the multi-state tax compact; the "unitary" concept; residency definitions; nonresident income sources; sales of tangible personal property and their taxation, including the impact of sales and use taxes on selected transactions, such as interstate purchases and sales, drop shipments, purchases from and sales to state and federal governments, occasional or "casual" sales, leasing transactions, and construction and manufacturing transactions; retail and wholesale sales; valuation techniques for real and personal property for purposes of certain state and local property taxes; and administrative procedures applied by various state and local tax jurisdictions. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6470 - Professional Judgment and Ethical Decision Making in Accounting and Tax (3 Credits)

The content of this course includes the following: the ethical responsibilities of accountants, both personal and professional; ethical dilemmas facing accountants; ethical theory; the various accounting codes of conduct and ethical guidance for accountants; and the application of ethical theory, codes of conduct, and professional standards. In addition, this course includes discussions on ethical considerations, mandates, and penalties germane to a tax accounting practice, with an emphasis on Treasury Department Circular No. 230; on tax penalties under IRC Code sections 6662, 6664, 6694, 6695, and 6696 as those penalties relate to taxpayers and tax return preparers; on the standards governing the issuance of tax opinions to clients, and on AICPA statements on standards for tax services. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6473 - Auditing for Taxes and Tax Fraud (3 Credits)

This course provides an introduction to and guidance for creation of an effective audit program for tax-based systems, with a focus on auditing tax fraud. The tax audit is designed specifically to detect potential misreporting of income and deductions and potential tax fraud. This course focuses on various methodologies that allow auditors to develop standards, objectives and procedures to examine systematically tax returns and tax strategies for misreported tax items and tax fraud.

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA within the Business School. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6475 - Accounting for Income Taxes (3 Credits)

This course addresses financial accounting reporting standards for income taxes. Principal topics include an understanding financial statement disclosures, identification of permanent and temporary differences, and calculation of current and deferred tax provisions. Additional topics include uncertain tax positions and valuation allowances. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MTAX 6482 - Advanced Partnership Taxation (3 Credits)

Advanced federal income tax course focusing on the taxation of partnerships and their partners. Topics: "substantial economic effect", allocation of debt to partners' bases, "hot assets", profits interests, related-party transactions, distribution "waterfalls", profit and loss allocation "waterfalls", and taxation of retiring partners. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or NBD within the Business School.

MTAX 6485 - Advanced Partnership Taxation (3 Credits)

This course is an advanced federal income tax course focusing on the taxation of partnerships and their partners. Topics often include discussions on allocations of partnership income and loss under the "substantial economic effect" and the partner's interest in the partnership rules, targeted capital accounts, allocation of debt to partners' bases, "hot assets", profits interests, related-party transactions, distribution "waterfalls", profit and loss allocation "waterfalls", and taxation of retiring partners. Students cannot receive credit for both MTAX 6485 and MTAX 6482. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6490 - Income Tax of Trusts, Estates, and Beneficiaries (3 Credits)

There are five major income tax areas that are fundamental to a CPA or legal tax practice: (1) individual; (2) partnership; (3) C corporations; (4) S corporations; and (5) "fiduciary" taxation. This course focuses on the last of the core types of income taxation – fundamentally, the taxation of trusts, estates and their beneficiaries under Subchapter J of the Internal Revenue Code. There are three major areas covered by Subchapter J. First, the grantor trust rules deal with revocable trusts and, to many practitioner's surprise, many irrevocable trusts. Second, estates and irrevocable trusts that are not grantor trusts are governed by the distributable net income rules. Third, when someone inherits an asset that was not taxed to the decedent, such as a retirement plan, the income in respect of a decedent rules apply to the heir. This course examines each of these three major areas of income taxation under Subchapter J and focuses on the practical aspects of completing IRS Form 1041, U.S. Income Tax Return for Estates and Trusts, using real life examples. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6495 - Travel Study: Washington, D.C. Tax Experience (2 Credits)

By petition only. This course is a travel program. Students will travel to Washington, D.C. to meet with representatives from the various governmental entities that influence federal taxation. In particular, students will meet with representatives (i) from the various Congressional committees and legislative advisory committees involved in drafting tax legislation, (ii) from the Internal Revenue Service and Treasury Department, and (iii) from the United States Tax Court and other courts that consider federal tax cases. Prereq: At least 6 credit hours of MTAX courses and a cumulative MTAX GPA of no less than 3.00. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 2 Credits.

Grading Basis: GRD

Prereq: At least 6 credit hours of MTAX courses and a cumulative MTAX GPA of no less than 3.00. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6499 - Consolidated Group Returns (3 Credits)

This course focuses on the preparation of consolidated group corporate tax returns filed pursuant to Internal Revenue Code section 1501 and the Treasury Regulations promulgated thereunder. Corporate affiliated groups are also discussed. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6500 - Advanced Corporate Taxation (3 Credits)

A study of the statutory and judicial tax rules and problems relating primarily to corporate reorganizations and commonly controlled corporations, with a special emphasis on the tax rules associated with restructuring of corporate entities in the context of corporate merger and acquisition transactions. Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Grade of C (2.0) or higher in ACCT 6140 or ACCT 4410 or at least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6800 - Special Topics in Taxation (3 Credits)

Courses offered irregularly for the purpose of presenting new subject matter in Taxation. Consult the current 'Schedule Planner' for semester offerings. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6840 - Tax Independent Study (1-3 Credits)

Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Prereq: At least 9 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: At least 9 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

MTAX 6939 - Tax Internship/Cooperative Education (1-3 Credits)

Supervised experiences involving the application of tax return preparation and tax planning concepts and skills in an employment situation. Prereq: At least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Prereq: At least 6 credit hours of MTAX courses. Restriction: Restricted to graduate business majors and NDGR majors with a sub-plan of NBA or CPA within the Business School.

Urban & Regional Planning (URPL)

URPL 5000 - Planning History and Theory (3 Credits)

This course offers a comprehensive review of the major historical and theoretical developments in planning; the human aspects of planning as a social, political, and community-oriented process; public engagement; social justice; planning leadership and advocacy; and the future of planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5010 - Planning Methods (3 Credits)

This course focuses on the most commonly applied quantitative and qualitative methods used in planning; data organization and management principles; and various ways to collect, analyze, and communicate data as a fundamental component of the planning process. Cross-listed with GEOG 4000. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5020 - Planning Law and Institutions (3 Credits)

This course covers the legal basis for planning; the evolution of planning law through a comprehensive review of landmark court decisions; and the types and hierarchies of governments, their powers and relationships, and how planning operates within those governmental contexts. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5030 - Planning Practice and Technology (3 Credits)

This course offers a comprehensive survey of planning practice; types of planning positions and employers; business aspects of planning; planning ethics; and professional/career development in planning. Introductory instruction is provided in Adobe Illustrator, Photoshop, and InDesign, and ESRI ArcGIS Pro. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5040 - Urban Sustainability (3 Credits)

Examines the interface of the natural and social realms in cities. Topics include the environmental history of cities; the causes, environmental impacts and mitigation of sprawl; urban green infrastructure; and best practices in planning environmentally sustainable cities and suburbs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5050 - Urban Development (3 Credits)

Explores the procedures, policies and politics of planning and real estate development. Topics include the relationship between planning goals and regulations; real estate development and finance; land division, entitlement, and regulation; site planning and development review; and public infrastructure. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 5060 - Planning Workshop (6 Credits)

An introduction to the studio environment, this course provides students with experience and knowledge/skills development in physical planning and design, the planning process, plan making, and collaborative planning, plus introductory instruction in GIS and SketchUp. Prereq: 9 hours of URPL Core Coursework. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: 9 hours of URPL Core Coursework (URPL 5000, 5010, 5020, 5030, 5040, 5050).

URPL 6000 - Planning Project Studio (6 Credits)

This studio course requires student teams to complete a substantial planning project using a comprehensive set of knowledge/skills for real-world clients. Five focus area options offered annually: Healthy Communities, Urban Revitalization, Regional Sustainability, International Experience, and Summer in Colorado. Prereq: URPL 5060 or 6630. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5060 or 6630 Restriction: Restricted to majors within the College of Architecture and Planning

URPL 6200 - Land Development Regulations (3 Credits)

This course provides a comprehensive exploration of the various components of land development regulation, including preliminary plats; general/final development plans; zoning; PUDs; variances; site plan/development review; land use regulators; regulatory processes. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6205 - Plan Making (3 Credits)

This course offers a broad overview of the various types of plans and the specific processes involved in their creation, including comprehensive plans; rural/small town plans; corridor plans; small area plans; campus/institutional plans; special plans. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6210 - Planning Engagement (3 Credits)

This course focuses on roles and methods of public engagement in planning. Topics include planning advocacy; public meetings; public engagement techniques; diverse publics; controversial planning topics; mediation. Restriction: Restricted to Graduate Urban and Regional Planning students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate Urban and Regional Planning students.

URPL 6215 - Analyzing the Built Environment (3 Credits)

This course explores various means and techniques used to analyze and characterize the built environment, including land division and development measures; urban morphology; and analyzing the spatial attributes of cities and regions at varying scales and perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6220 - Advanced Research Techniques (3 Credits)

This course offers an in-depth look at a variety of research principles and techniques, including advanced qualitative and quantitative data collection; survey design; sampling; probability distributions; hypothesis testing; inferential statistics; other topics associated with scholarly research. Prereq: URPL 5040 or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5040

URPL 6225 - Urban Policy Analytics (3 Credits)

This course teaches quantitative analysis techniques to answer questions about Planning. Topics include population/economic forecasting, analysis of census data, research design, and survey design. Relying on the software R, students learn how to manage datasets and run bivariate/multivariate statistical analysis. Prereq: URPL 5010 - Planning Methods or instructor's permission. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: URPL 5010 or Instructor's permission.

URPL 6249 - Project Management (3 Credits)

Introduces the knowledge and skills of Project Management (PM) in a business environment. Emphasis will be on the entire project life cycle, the project management process groups and the knowledge areas as presented in the Project Management Body of Knowledge (PMBOK), from the Project Management Institute (PMI). Managerial aspects, quantitative tools, and traditional techniques of Project Management will be covered. A variety of projects will be examined. Note: Cannot receive credit for both DSCI 6820 and BUSN 6820. Cross-listed with BANA 6650. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6250 - GIS for Urban Planning (3 Credits)

This course is a detailed introduction to GIS that focuses on spatial analytics for Urban Planning using vector and raster data. Aimed at professionals and researchers, this course includes advanced ArcGIS applications and tools, and innovations in geo-spatial data analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6255 - Emerging Planning Technologies (3 Credits)

This course explores the rapid pace of innovation in planning-related technologies and offers a comprehensive review of the latest web-based and mobile applications, and new technologies used in virtual participation/engagement, data collection/visualization, social media/crowdsourcing, and geo-spatial data collection and analysis. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6260 - Advanced Geo-Spatial Methods (3 Credits)

Students will be introduced to the hardware, software, theory, and skills required to use Geographical Information Systems (GIS). In this course, students will learn how to use GIS software to manage, analyze, map, and present spatial data to support the planning and design processes.

Prereq: An introductory GIS class is required before taking this class. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6265 - Visualization for Planning (3 Credits)

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling infographics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales.

Restriction: Restricted to graduate level MURP and MUD students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate level MURP and MUD students.

URPL 6300 - Community and Environmental Health Planning (3 Credits)

A place-based approach to understanding the social, economic, environmental, and political factors that influence individual and community health with a focus on reducing health disparities. Covers policies, practices, data, and methods for healthy communities planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6305 - Healthy Community Assessments (3 Credits)

This course focuses on defining, organizing, and conducting Health Impact Assessments, health measures, policies, best practices, and other types of studies and analyses related to the link between the built environment, public health, and healthy communities. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6310 - Community Food System Planning (3 Credits)

Healthy communities require sustainable local and regional food systems. This course examines how communities can collaboratively develop and implement programs, processes and practices that help ensure food security and equitable access to healthy food options for all populations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6349 - Global Health Studies II (3 Credits)

Global Health Studies II: Comparative Health Systems. The course has three parts: (1) examines the social and cultural construction of sickness, systems of etiology cross culturally, the therapeutic encounter, varying roles of healer and patient, and the cultural basis of all healing systems; (2) considers health systems in the context of global health reform, and the history, organization, and roles of institutions of global health governance; and (3) considers the interrelationship of health, foreign policy and global security. Cross-listed with PBHL 4020. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6350 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Cross-listed with ARCH 6270, URBN 6525, and LDAR 5530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6355 - Urban Redevelopment Strategies (3 Credits)

This course focuses on the best practices and strategies used to help revitalize urban areas. Topics include urban infill development; TODs; adaptive reuse; historic preservation; design review; parking; public spaces; brownfield/grayfield redevelopment; culture/tourism; special districts; incentives/funding; and revitalization policies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6360 - Urban Infrastructure (3 Credits)

This course provides a comprehensive exploration of transit planning, including transit planning fundamentals; transit routes and systems; transit modes and technologies; ridership modeling; scheduling; operations; funding; policies and regulation; relationship to land use; and facilities/design requirements. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6365 - Parks and Public Spaces (3 Credits)

This course offers a focused look at the role of parks and public spaces in the development and activation of cities; their designs, qualities, and components; management /operations; funding; policies; equal access; role as community and economic development tool. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6370 - Sprawl and Growth Management (3 Credits)

This course addresses causes of sprawl (large lot zoning, highway subsidies, suburban amenities, taxes and municipal services), social and environmental consequences of sprawl, anti-sprawl growth management policies, open space preservation methods, and retrofitting suburbs. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6395 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Restriction: Restricted to graduate level students. Cross-listed with URBN 6625 and ARCH 6261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URPL 6396 - Urban Design and Environment (3 Credits)

Provides an understanding of the inextricable relationship between urban design and the natural environment. Students learn how to design sustainable public spaces, promote environmental resilience, combat climate change, and foster environmental justice and healthy communities through urban design. Restriction: Restricted to Graduate level students. Cross-listed with URBN 6650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6397 - Design Policy, Process, and Regulation (3 Credits)

Explores the many design regulations that shape the urban form, how they are created and evolve, and how they impact design ideation, analysis, and communication using real-world scenarios to experiment with and test iterative design processes and techniques. Cross-listed with URBN 6550. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6398 - Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Cross-listed with URBN 6641 and LDAR 6741. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6399 - Sustainable Urban Infrastructure (3 Credits)

Focuses on developing uniform vocabulary on sustainable infrastructure across science & technology, architecture & planning, public policy, and health & behavioral sciences. Students learn concepts, principles/ pathways and evaluation techniques for promoting the diffusion of sustainable urban infrastructures. Cross-listed with CVEN 5460. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6400 - Community Development (3 Credits)

This course introduces community development, examining planners' and other stakeholders' roles in the field; key theories and practices; community dynamics; community-based organizations; asset-based development; social equity; and the influence of local physical and economic factors on community development. Cross-listed with ARCH 6256. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6405 - Urban Housing (3 Credits)

This course examines housing trends and patterns; supply and demand factors; housing policies; housing challenges (e.g., inequitable distribution, special needs, segregation/discrimination, and homelessness); sociological, demographic, and economic considerations; and the roles of planners and the public and private sectors. Cross-listed with LDAR 6755 and ARCH 6205. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

URPL 6410 - Social Justice in Planning (3 Credits)

This course investigates various social justice issues encountered in planning, including conflict resolution; advocacy; environmental justice; social equity; culture and diversity; disadvantaged populations; public engagement techniques; affordability; equal access; and policy impacts. Cross-listed with LDAR 6637 and ARCH 6258. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6449 - Urban Social Problems (3 Credits)

Examines local government from the perspective of sociology and group dynamics. Course could include some or all of the following subjects: neighborhoods and community groups, class and race relations, community crime, social service issues, immigration, the underclass in American society, and related urban social problems. Cross-listed with PUAD 7628. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6450 - Urban Economic Analysis (3 Credits)

This course introduces students to the fundamentals of urban, land, and transportation economics, covering topics such as land markets, environmental regulation, infrastructure and service finance, impact fees, land value capture, pricing incentives, decision analysis, and cost-benefit analysis. Restriction: Restricted to graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6455 - Real Estate Development and Finance (3 Credits)

The course offers a detailed analysis of the real estate development process, its relationship to the planning/design profession, and financial aspects of real estate development including measures of value, capitalization rates, capital budgeting, debt and equity markets and taxation. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6460 - Green Real Estate Development (3 Credits)

This course offers an exploration into the principles, designs, policies, and best practices relating to sustainable real estate development. Topics include infill development; transit-oriented development; LEED-ND; green buildings; universal design; mixed-income projects; and net-zero developments, among others. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6499 - Preservation Theory and Practice (3 Credits)

Philosophical questions in preservation practice; balancing significance in the environment with natural decay and demands for change. Policy issues as well as preservation and adaptation design. Cross-listed with HIPR 6010. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6500 - Environmental Planning/Management (3 Credits)

This course addresses issues related to planning under major environmental laws, ecosystem service-based management, urban green infrastructure, urban watershed and river management, urban forest and parks planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6505 - Enviro. Policy & Regulation (3 Credits)

This course focuses on the important field of environmental policy and regulation, including topics such as the National Environmental Policy Act (NEPA); environmental justice; environmental law; land use conflicts; contamination/remediation; environmental regulators; and regulatory policies and enforcement. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6510 - Energy/Natural Res. Planning (3 Credits)

This course provides an overview of the issues associated with energy and natural resource planning. Topics include: energy policy; alternative energy development; water resources; extraction/mining; natural resource protection and regulation; resource management, policies, politics, and technologies. Cross-listed with GEOG 4260. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6515 - Sustainable Planning & Design (3 Credits)

This course takes a comprehensive look at the principles of sustainable planning and design. Topics include: sustainability defined; measuring sustainability; sustainable planning/practices; sustainable design; LEED and other sustainability programs and organizations; environmental quality; sustainability advocacy. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6547 - Urban Ecology (3 Credits)

This lecture/seminar will cover ecological principles as applied to urban systems (lecture portion) and students will do an intensive study, presentation, and discussion on the topic of their choosing (seminar portion). Cross-listed with LDAR 6655. Restriction: Restricted to graduate students in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate CAP students.

URPL 6548 - Defining & Measuring Sustainability (3 Credits)

Unique cross-disciplinary course that teaches students community engagement strategies to define sustainability goals. Life cycle assessment and material flow analysis tools used to measure environmental sustainability benchmarks. Fieldwork applies both tools to cities in Colorado. Cross-listed with CVEN 5461. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6549 - Environmental Impact Assessment (3 Credits)

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Prereq: URPL 5530 or permission of instructor. Cross-listed with GEOG 4220, 5220. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6550 - Transportation Planning/Policy (3 Credits)

This course examines policy issues in urban transportation planning: how transportation system design and political/institutional contexts shape transportation decision-making; major modes of urban transportation; and the social, environmental, economic, energy, and health impacts of transportation systems. Cross-listed with GEOG 4670. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6555 - Transportation, Land Use, and the Environment (3 Credits)

This course teaches how current transportation modes shape regions and how future transportation technologies might impact us. Topics include policy making and governance; land use interactions with transportation investments; climate change and resilience; energy use; environmental justice; and equity considerations. Restriction: Graduate level students. Cross-listed with GEOG 4630. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6560 - Transit, Pedestrian, and Bicycle Planning (3 Credits)

This course provides a comprehensive exploration of how to plan and design infrastructure for transit, walking, and bicycling. Topics include user characteristics, data needs, technical design aspects, coalition formation, and marketing. The course also introduces first-/last-mile issues, micro-mobility, and mobility-as-a-service. Restriction: Graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6565 - Pedestrian & Bicycle Planning (3 Credits)

This course provides a detailed focus on the unique planning issues and factors involved with bicycle and pedestrian modes of transportation, including pedestrian/bicycle planning fundamentals; routes and systems; facilities and design requirements; funding; maintenance and operations; policies; and best practices. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6598 - Traffic Impact Assessment (3 Credits)

Covers (1) procedures to satisfy state and local requirements for transportation impact studies, (2) methods to perform trip generation, distribution, and traffic assignment for impact analyses, and (3) analysis of transportation impacts on residential communities, mode choice, regional business (downtown or suburban), peak and off-peak travel times, noise, safety, parking and pedestrians. A course project requires students to develop an application of analysis software to a case study area. Cross-listed with CVEN 6512. Restriction: Graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URPL 6599 - Sustainable Transportation Systems (3 Credits)

This course examines notable topics in sustainable transportation: demystifies conventional transportation engineering methods; and explores empirical examples of why such methods are often misguided. The intent is to enlighten engineering students and help support planning/policy students interested in transportation sustainability. Cross-listed with CVEN 5633. Restriction: graduate standing or permission of instructor. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URPL 6600 - Regional Growth and Equity (3 Credits)

Explores the institutions, policies, laws and funding that support planning for housing, transportation, infrastructure, air quality, and job creation at the metropolitan scale. Students will learn analytic techniques to study the labor market, economic growth and performance, commuting patterns, etc. Restriction: Restricted to graduate level students. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6605 - Regional Economic Systems (3 Credits)

This course offers a comprehensive investigation into regional economic systems; metropolitan economies; regional economic development; regional market assessment; job generation; taxes/spending; and fiscal/economic policies and impacts at the metropolitan, regional, and statewide scale. Cross-listed with GEOG 4400. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6610 - Planning Sustainable Suburbs (3 Credits)

This course takes a detailed look at the unique characteristics, issues, and challenges associated with planning and retrofitting automobile-oriented suburban communities and the opportunities for development of new communities using sustainable planning and design principles. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6615 - Small Town, Rural, and Tourism Planning (3 Credits)

This course investigates issues and challenges associated with rural, small town, and tourism planning including farmland conservation, growth management, sustainable food systems, economic development, and revitalization. It reviews global trends, national policies, and local planning processes through case studies. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6620 - Tourism and Resort Planning (3 Credits)

This course investigates the unique aspects associated with planning and developing sustainable tourism infrastructure. Topics include: eco-tourism; historic tourism; cultural tourism; urban tourism; sports and recreation planning; regional tourism planning; and sustainable resort planning and development. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6625 - Sustainable Planning for Tourism and Small Towns (3 Credits)

This course is about sustainably planning for tourism-dependent communities, particularly small towns. It focuses on the impacts of tourism on fragile cultural and ecological environments and addresses how to assess impacts, mitigation approaches and tools, and communication with the public. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6645 - Disaster/ClimateChangePlanning (3 Credits)

Introduces students to concepts and debates that shape disaster and climate change studies. Features case studies of disaster and climatic issues affecting Colorado and the Rocky Mountain region. Looks specifically at how planning can reduce risk and increase local resilience.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6650 - International Development Planning: Theory and Practice (3 Credits)

This course examines key development issues and planning approaches in cities of the Global South. Topics include: development theory; legacies of colonial urbanisms; actors and institutions in development; urban informality; water and sanitation; housing and land tenure; and climate change, among other topics. Max hours: 3 Credits.

Grading Basis: Letter Grade

URPL 6655 - Comparative International Planning (3 Credits)

This course investigates the global dimensions of planning, including a survey of global planning issues; a comparative analysis of planning philosophies, policies, techniques and approaches used throughout the world; and international planning coordination and organizations. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Graduate level students

URPL 6675 - International Field Research: Methods and Analysis (3 Credits)

This course will teach students the fundamentals of data collection, analysis, and dissemination in an international - and mostly developing world - context. Restriction: Restricted to graduate students within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to graduate students within the College of Architecture and Planning

URPL 6800 - Special Topics: Urban and Regional Planning (3 Credits)

Various topical concerns are offered in urban and regional planning, theory, concepts, methods, case studies and practice. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Graduate level students

URPL 6805 - Planning Internship (3 Credits)

Designed to provide professional practice experience in urban and regional planning. The emphasis is on actual work experience in settings with client groups as the students assist them in determining solutions to their problems. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URPL 6810 - Independent Study: URPL (1-3 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban and regional planning. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URPL 6850 - ACE Mentoring (3 Credits)

Graduate students work with professional architects, designers, and engineers mentoring students in selected local high schools to learn problem solving, graphics and model making to produce a design project.

Student mentors develop lesson plans, outcomes and keep a weekly journal. Cross-listed with ARCH 6470 and LDAR 6470. Restriction:

Restricted to majors within the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Pass/Fail Only

Restriction: Restricted to majors within the College of Architecture and Planning

URPL 6900 - Planning Capstone (6 Credits)

Planning Capstone A requires students to identify an independent study/ small group project of their choosing and develop a detailed plan to complete the project. Prereq: URPL 6000 or instructor consent. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URPL 6000 Restriction: Restricted to MURP graduate majors within the College of Architecture and Planning

URPL 6920 - Planning Thesis A (3 Credits)

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part A provides instruction for proper thesis research, analysis, and writing while students develop a detailed work plan and begin their research. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Additional Information: Report as Full Time.

URPL 6925 - Planning Thesis B (3 Credits)

Spanning two semesters, Planning Thesis requires students to plan and complete a research thesis of their choice. Part B includes the completion of the research and the thesis document, and presentation of the project to the student's thesis committee. Prereq: URPL 6920. Max hours: 3 Credits.

Grading Basis: Letter Grade with IP

Prereq: URPL 6920.

Additional Information: Report as Full Time.

URPL 6940 - Teaching Assistantship (3 Credits)

Work as teaching assistant, mentored by the class instructor. Assist with curriculum delivery and development and grading of assignments while learning about pedagogical methods. This is intended for students who may be considering a career in teaching. Max hours: 3 Credits.

Grading Basis: Letter Grade

Urban Design (URBN)

URBN 6500 - Urban Design Studio I (6 Credits)

Introduces urban design at a citywide scale through the evaluation of urban structures, systems, networks, and spatial forms that create the complex organism known as the city. Students explore urban design concepts as physical solutions to real-world issues. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6525 - City Design Fundamentals (3 Credits)

Investigates the historical roots, spatial patterns, and physical forms of cities and their evolution over time; the environmental, cultural, and economic forces influencing city design; and urban design as the nexus of the planning and design professions in contemporary city-building. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6350, ARCH 6270, and LDAR 5530. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6550 - Design Policy, Process, and Regulation (3 Credits)

Explores the many design regulations that shape the urban form, how they are created and evolve, and how they impact design ideation, analysis, and communication using real-world scenarios to experiment with and test iterative design processes and techniques. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6397. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6575 - Advanced Visualization for Urban Design (3 Credits)

Provides advanced instruction in effective communication and visualization through the use of digital tools commonly used in urban design (e.g. Photoshop, Illustrator, InDesign, SketchUp, Lumion). Topics include graphic design theory, use of storyboards, renderings, diagrams, maps, sketches, photographs, and infographics. Prerequisite: Intermediate-level knowledge and experience in the Adobe applications covered in the course. Max hours: 3 Credits.

Grading Basis: Letter Grade

URBN 6600 - Urban Design Studio II (6 Credits)

Advances the understanding and application of urban design tools, methods, and practices and engages students in a real-world project with a community partner. Students integrate real estate development, economics, environmental and social equity, aesthetic criteria, historic preservation, and community engagement. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6625 - Urban Design Economics and Equity (3 Credits)

Explores the economics of urban design through its relationship with private-sector real estate development, public-sector infrastructure, and budgetary/fiscal constraints on design implementation while emphasizing the critical role of urban design in advocating for social equity, affordable housing, and related issues. Restriction: Restricted to graduate-level students. Cross-listed with URPL 6395 and ARCH 6261. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URBN 6640 - History of the City (3 Credits)

Introduces students to the history of global cities through selected typologies. Explores similarities and differences among cities considered against the larger cultural, political and socio-economic envelope of which they are part. Provides awareness of origins, growth and evolution of urban form. Cross-listed with ARCH 6240. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6641 - Design Process (3 Credits)

Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar. Restriction: Restricted to students with graduate standing. Cross-listed with URPL 6398 and LDAR 6741. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6643 - Visualization for Planning (3 Credits)

This course covers visual design theory and advanced instruction in Adobe Illustrator, Photoshop, and InDesign to create compelling infographics, renderings, and reports, as well as advanced instruction in SketchUp to create 3D visualizations at multiple urban scales. Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6644 - Sustainable Urbanism (3 Credits)

This seminar explores the connections between ecology and urbanism. It will examine the multiple, interrelated ecological and social systems operating in the city. Students will explore innovative design processes and techniques that serve to create a higher quality of life and place with a particular emphasis on the effectiveness of sustainable design approaches at varying scales. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6645 - Global Design Practice (3 Credits)

This seminar will educate students about critical issues related to practicing design in a global context. Course will examine diverse issues of design and planning practice from contracts, communication and culture to remote research, design opportunities and ethics. Prereq: URBN 6612. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6650 - Urban Design and the Environment (3 Credits)

Provides an understanding of the inextricable relationship between urban design and the natural environment. Students learn how to design sustainable public spaces, promote environmental resilience, combat climate change, and foster environmental justice and healthy communities through urban design. Restriction: Restricted to graduate-level students. Cross-listed with URPL 6396. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing (Grad or Non-Degree Grad)

URBN 6652 - Design Seminar (3 Credits)

Investigates topical issues in urban design, typically within the framework of a theme running through an entire course of study. Focus is on critical evaluation of theory, process and methods. Cross-listed with LDAR 6652. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6675 - Design Practice and Leadership (3 Credits)

Provides students with an understanding of urban design as a professional practice; how it functions within a collaborative, interdisciplinary environment; and the interpersonal skills needed to successfully work as part of and be a leader in a complex design team. Restriction: Restricted to students with graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students with graduate standing.

URBN 6686 - Special Topics: Urban Design (3 Credits)

Various topical concerns are offered in urban design history, theory, elements, concepts, methods, implementation strategies, and other related areas. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6700 - Urban Design Advanced Travel Studio (6 Credits)

Travels to international or US urban location(s) to engage in advanced urban design development, analysis, and production on a real-world project that includes multiple environmental, cultural, and economic influences; wide-ranging urban planning contexts, and various design dimensions and functional considerations. Max hours: 6 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to ARUR-MUD majors in the College of Architecture and Planning.

URBN 6725 - Urban Design Capstone (6 Credits)

Requires students to work individually, paired with an urban design practitioner mentor, on a complete design solution for a real-world client that incorporates the full spectrum of urban design knowledge, methods, and skills to produce professional-grade urban design plan deliverables. Prereq: URBN 6600: Urban Design Studio II. Max hours: 6 Credits.

Grading Basis: Letter Grade

Prereq: URBN 6600

URBN 6840 - Independent Study: URBN (1-6 Credits)

Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban design. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

URBN 6930 - Urban Design Internship (3 Credits)

Designed to provide professional practice experience in urban design. Emphasis on actual work experience in settings with client groups as students assist them in determining solutions. Program directors approval required. Max hours: 3 Credits.

Grading Basis: Letter Grade

Urban Teacher Education (UEDU)

UEDU 5015 - TFA Professional Learning Communities (3 Credits)

The Teach for America Professional Learning Communities are designed to be a resource and forum for content groups to collaborate on best practices in assessment, instruction, and data gathering. As truly purposeful communities, they exhibit five characteristics: a shared mission and vision, high levels of collective efficacy, strategic use of all available assets, outcomes that matter to all, and adherence to agreed-upon processes. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restrictions: Restricted to CIED-MA majors with an option UBL within the School of Education and Human Development.

UEDU 5040 - Planning for Learning (3 Credits)

This course explores multiple aspects of student learning: Including 1) standards-based instruction 2) cultural responsive instructional design, 3) assessment and data, and 4) differentiation in curriculum and instruction so that meaningful instruction becomes accessible to all students.

Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Cross-listed with 4040. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

UEDU 5050 - Elementary Capstone: Planning, Instruction & Assessment (3 Credits)

The purpose of this course is to re-visit multiple aspects of instructional and curriculum design, implementation, and evaluation. The goal is to promote access to knowledge for all learners, including those who are diverse linguistically and culturally and those identified with special needs. Cross listed with UEDU 4050. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

UEDU 5052 - English/LA & Social Studies Capstone: Secondary Ed (3 Credits)

Through teaching units of instruction in school placements, secondary English/LA and Social Studies teacher candidates learn both unit and lesson design, assessment of student learning, and differentiation of curriculum and instruction to promote access to knowledge for all learners. Cross-listed with UEDU 4052. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

UEDU 5060 - Motivation and Engagement in Curriculum and Learning (3 Credits)

This course focuses on the Six Cs of motivation and engagement; the framework designed to reach these students who are not complaint learners. This course allows teachers to think deeply about their role in motivating and engaging students and allows participants to apply the research to their individual classrooms. The classes incorporate the M.E. (motivation and engagement) Framework into each lesson. Teachers will gain a deep understanding of motivation and engagement through modeling, research, and a "transfer" of knowledge. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5070 - Curriculum Theories in Urban Education (3 Credits)

Topics in this course include: curriculum theory; the debate on the purpose of curriculum; multicultural education; critical race theory; social class and school improvement; the intended and unintended consequences of school accountability, reform and closures; teacher retention; and teacher burnout. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5075 - Transforming Pedagogy for the 21st Century (3 Credits)

This course is designed to support teachers in establishing a classroom culture centered on fostering students' 21st Century Success skills: collaboration, communication, creativity, and critical thinking. Teachers will explore ways of implementing and supporting 21st-century skills in planning and instruction. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5110 - Tchg Literacy in Eng Ed (3 Credits)

Designed to meet both Colorado Literacy Council & Colorado Performance-Based Standards for prospective secondary English/LA teachers concerning Knowledge of Literacy, the course provides knowledge and practice using specific literacy methods to enhance students' literacy development in English/LA/reading classrooms. Cross-listed with UEDU 4110. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5240 - Culture of Education Policy (3 Credits)

This course examines major issues in education policy analysis. Students will be required to critically analyze an educational policy issue uncovering the context, determining how the policy was implemented and what the outcomes were, intended as well as unintended. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5340 - Leading Social Emotional Learning in P-12 Schools (3 Credits)

In this course, scholars will learn the various definitions, purposes and value of socialemotional learning (SEL) in order to lead social-emotional learning in P-12 schools. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5464 - Methods Teachg Social Studies (3 Credits)

One of two courses on linguistically and culturally relevant social studies teaching. Course content includes geography, economics, civics. Cross-listed with UEDU 4464. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

UEDU 5465 - Methods of Teaching History (3 Credits)

One of two courses on linguistically and culturally relevant history teaching. Cross-listed with UEDU 4465. Restriction: Restricted to students in the Teacher MA or undergraduates in the BAMA. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: TCHR-MA plan or BMA subplan.

UEDU 5470 - Democracy and Social Studies Education (3 Credits)

This course explores the current and historical relationship between democracy and social studies education and challenges teachers to think critically about challenging students to not only participate in democracy but transform it. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5660 - History of Schooling in the United States (3 Credits)

This course introduces education professionals to the history of contemporary public school. The contents of this course emphasize the ways in which people from marginalized national and cultural groups have experienced education through eras of compulsory schooling, school segregation, and the contemporary context of school reform. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5705 - Global Experiential Learning (3 Credits)

Develop global competency skills. Research problems or opportunities of global significance using 21st century skills. Engage in learning communities to reflect, analyze and communicate international educational experiences. Design global education teaching and learning or compare education perspectives. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5710 - Global Education Capstone Project (3 Credits)

Propose a culminating project that allows integration of previous coursework and travel experience to translate into practice. Collaborate to develop a product that will be of use in a work setting, school, or classroom. Present and defend the capstone project. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5840 - Independent Study (1-6 Credits)

Independent Study in Urban Community Teacher Education, Topic of study varies according to project. Repeatable. Max Hours: 12 Credits. Grading Basis: Letter Grade Repeatable. Max Credits: 12.

UEDU 5845 - Special Topics: (1-5 Credits)

Course topics will vary depending on faculty and student interests. Repeatable. Max Hours: 15 Credits. Grading Basis: Letter Grade Repeatable. Max Credits: 15.

UEDU 5850 - Capstone for Integrated MA (3 Credits)

The capstone is a culminating project that provides a way for students to demonstrate the knowledge and skills they acquired during the MA program skills by planning, completing, and presenting a culminating project linked to the United States educational system. Max hours: 3 Credits.

Grading Basis: Letter Grade

UEDU 5931 - Internship & Lrng Comm I (2 Credits)

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Cross-listed with UEDU 4931. Max hours: 2 Credits.

Grading Basis: Letter Grade

UEDU 5932 - Internship & Lrng Comm II (2 Credits)

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Prereq: UEDU 5931. Cross-listed with UEDU 4932. Max hours: 2 Credits.

Grading Basis: Letter Grade

UEDU 5933 - Internship & Lrng Comm III (8 Credits)

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, teacher candidates participate in the activities of a school community (the school, its classrooms and the community in which the school exists). Graduated learning activities for each internship and time requirements are specified in the program handbook. Prereq: UEDU 5931 and UEDU 5932. Cross-listed with UEDU 4933. Max hours: 8 Credits.

Grading Basis: Letter Grade

UEDU 5934 - Extended Internship & Learning Community (3-8 Credits)

Teacher candidates engage in systematic observation of, participation in, design of, and reflection on curricular, instructional, and management practices across the full range of educational programs within a school. Additionally, they participate in the activities of a professional learning community. Cross-listed with UEDU 4934. Repeatable. Max Hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Women's Studies (WGST)

WGST 5010 - Special Topics in Women's and Gender Studies (1-3 Credits)

Examines current topics in the field of Women's studies and Gender studies. Topics vary from term to term. May be repeated as long as the topic is distinct and different from courses student has already received credit for. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Repeatable. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5225 - Urban America: Colonial Times to the Present (3 Credits)

Rise of the American city from colonial times to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of urban America. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HIST 4225, HIST 5225, WGST 5225, GEOG 4625. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5230 - Women in the West (3 Credits)

Focuses on ways in which women, from the mid-19th century through the mid-20th century, of different races, classes, and ethnic background, have interacted and been active participants in the development of the Western states. Cross-listed with WGST 4230 and HIST 4230/5230.

Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5248 - Gender, Globalization and Development (3 Credits)

Analyzes the effects of globalization on the gendered processes of international development and strategies to empower women to achieve gender justice across race, class and national divisions. Cross-listed with WGST 4248 and PSCI 4248/5245. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5270 - Social Meanings of Reproduction (3 Credits)

Reproduction involves more than biological processes, assuming symbolic, political, and ideological meanings. This course examines contested meanings of reproduction, including how people experience reproduction, controversies over who should reproduce (and under what circumstances), and how public policy mediates these conflicts. Cross-listed with SOCY 4270, SOCY 5270 and WGST 4270. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5303 - Sex and Gender in Modern Britain (3 Credits)

Examines modern British history by focusing on sex and gender as central aspects in people's lives. Considers the ways gender shapes the realms of politics, economics, society and culture in Britain from the 18th century to present. Cross-listed with WGST 4303 and HIST 4303/5303.

Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5305 - Women of Color Feminisms (3 Credits)

This course is an overview of women of color feminist theorizing (thinking) and praxis (practice) in the U.S. We will explore these feminisms through the writing, art, and organizing efforts of women and trans, femme, and non-binary people of color with a focus on key themes and concepts including identity, difference, oppression, intersectionality, representation, violence, resistance, empowerment, solidarity, and coalition. Texts for the course highlight key issues in the feminist theorizing and praxis of Black, Latina/x, Chicana/x, Asian (American), Pacific Islander, Indigenous, and Arab (American) women and trans, femme, and non-binary people of color, especially the politics of identity and representation; structural oppressions and violences; and practices of survival, resistance, and activism. Not only will we examine how these feminists have critiqued oppression(s) based on race, class, gender, sexuality, nationality, and religion, (as well as how these systems of domination intersect), but what kinds of approaches, strategies, and changes these thinkers and activists have organized for and promoted. Cross-listed with WGST 4305, ETST 4305 and ETST 5305. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5306 - Survey of Feminist Thought (3 Credits)

Examines changes and continuities in feminist thought from the 18th century to the present, using historical and literary materials. Explores the ways that women's characteristics, experiences, and capabilities have been understood and challenged. Cross-listed with ENGL 4306, 5306, HIST 4306, 5306, WGST 4306. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5307 - History of Sexuality (3 Credits)

Explores the relationships between gender and norms, sexual practice, and ideas about sexuality in Europe and the United States. Examines how sex and sexuality have changed over time and how those changes relate to social, cultural, political and economic history. Cross-listed with WGST 4307 and HIST 4307/5307. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5308 - Contemporary Feminist Thought (3 Credits)

This course explores contemporary feminist thought in philosophy and literature in the 20th and 21st centuries. Topics include lesbianism, black feminism, Chicana feminism, transgender identity, women and work and others. Cross-listed with ENGL 4308, ENGL 5308, PHIL 4308, PHIL 5308, WGST 4308. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5343 - Women & Gender in US History (3 Credits)

This course will explore women and gender as drivers of US history. From politics to popular culture, jobs to sexual empowerment, civil rights to economic restructuring, we will use gender as a lens to re-envision familiar stories about American history. Cross-listed with WGST 3343, HIST 3343, and HIST 5343. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5345 - Gender, Science and Medicine: 1600 to the Present (3 Credits)

Examines the ways science and medicine have both shaped and been shaped by ideas about gender. Pays particular attention to the relationship between scientific/medical ideas about the sexes and the social organization of gender. Cross-listed with WGST 4345 and HIST 4345/5345. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5420 - Goddess Traditions (3 Credits)

Explores the many forms which Goddesses have assumed through history, including the Neolithic Great Mother and her heiresses in the ancient Mediterranean cultures, such as: Isis, Ishtar, Demeter, Hecate, Aphrodite, Artemis, Athena and others, and their parallels in India. Goddess traditions have encompassed a full spectrum from virgins to Great Mothers to dark underworld Goddesses of death and destruction. Cross-listed with WGST 4420 and RLST 4420/5420. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5500 - Feminist Philosophy (3 Credits)

Seminar on key debates & figures in historical & contemporary feminist philosophy. Topics may include: rights, embodiment, gender, sexuality, race, reason, & violence. Figures may include: Wollstonecraft, Stanton, Beauvoir, Judith Butler, and bell hooks. Cross-listed with WGST 4500, PHIL 4500 & 5500. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5510 - Whores and Saints: Medieval Women (3 Credits)

Studies how women are presented in texts, as well as works by women. Investigates the roles open to women and societal attitudes toward women, who were considered seductresses, saints, scholars and warriors in the middle ages. Prereq: Nine hours of literature courses or instructor permission. Cross-listed with WGST 4510, ENGL 4510/5510 and RLST 4730/5730. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5511 - French Women Writers (3 Credits)

Designed to explore writings by French and Francophone women from the Middle Ages to the present. Addresses the question of what it means to be a woman and want to write. The selections include a wide variety of genres: autobiographical writings, stories, poems, manifestos, letters, political and historical documents. Note: This course assumes that students have passed FREN 3112 or 3122 or an equivalent course, plus one other 3000 level course in French. Prereq: Graduate standing. Cross-listed with WGST 4511 and FREN 4510/5510. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5540 - Race, Class and Gender in Spanish Golden Age Literature (3 Credits)

Explores works of various genres in relation to their social and political contexts in 16th and 17th century Spain, emphasizing the cultural attitudes toward race, class, and gender that inform them. Prereq: graduate standing. Cross-listed with WGST 4540 and SPAN 4340/5340. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5555 - International Women's Resistance (3 Credits)

Examines local and international struggles of women to build peace and justice by resisting systems of inequality such as colonialism, racism, patriarchy, globalization, and religious intolerance. Cross-listed with WGST 4555, ETST 4555 and PSCI 4555/5555. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5660 - Queer Media Studies (3 Credits)

Queer Media Studies is a discussion-based, writing-intensive seminar that examines the history and development of U.S. LGBTQI media by focusing on media texts and production, sociocultural context, and media reception. Cross-listed with COMM 4660, COMM 5660, WGST 4660.

Restriction: Restricted to Graduate and Graduate Non-Degree majors

(NDGR-NHL and NDGR-NLA). Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5710 - Women and Religion (3 Credits)

A sociological exploration of the contemporary roles of women in religion. Course examines American and world religious groups with an eye to women's involvement. Considers how women have changed these traditions as they take on leadership roles and discusses the tensions that arise within these traditions as a result of their expanded participation. Cross-listed with HUMN 5710, SSCI 4710/5710, WGST 4710, RLST 4710/5710. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5720 - Sexuality, Gender and Their Visual Representations (3 Credits)

Studies sexuality, gender and identity representation from classical antiquity through the present in the visual arts. Uses the literature of visibility, feminism, race and queer theory. Explores representations of femininity, masculinity and androgyny and their reinforcement and challenge to gender-identity norms. Cross-listed with HUMN 5720 and SSCI 5720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5780 - Violence in Relationships (3 Credits)

Course focuses on the study of violence among individuals involved in intimate relationships; factors in society such as norms, laws and institutions that are related to creating violence among intimates; and social policies, prevention, intervention and treatment programs. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with SOCY 4780, SOCY 5780 and WGST 4780. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5840 - Independent Study (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Prereq: permission of instructor. Repeatable. Max Hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

WGST 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the Graduate School for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

WGST 5900 - Smart Girl Coaching Training and Practicum (3 Credits)

Course provides training (lecture and role-playing) in coaching and mentoring which will be applied to support near-peer guides in delivering the Smart Girl curriculum in school settings. Following the completion of the training, students work as coaches for teams of near-peer mentors and groups of teenage girls in the Denver Community, and apply the skills learned in their training. Prereq: Graduate standing. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 5933 - Philosophy of Eros (3 Credits)

What does it mean to understand philosophy as an erotic activity? This question will be examined, first by studying Plato's dialogues-such as Lysis, Symposium and Republic-and then by reading texts from Sigmund Freud, Michael Foucault and others. Cross-listed with PHIL 4933/5933, WGST 4933, SSCI 5933 and HUMN 5933. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

WGST 6010 - Methods and Theories of Feminism and Gender Studies (3 Credits)

Provides graduate-level interdisciplinary study in historiography, methodologies and theories of women's, gender and sexuality studies and considers how culture is constructed around these categories. Cross-listed with SSCI 6010 and HUMN 6010. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

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