

ME 5141 (Viscous Flow) and ME 4141 (Fluid Mechanics)
Spring 2008 (Tuesday and Thursday, 5:30 PM – 6:45 PM)

organizations write their papers or any part of their papers). **Extra credit will be given to students that give a 15 minute oral presentation of their paper.** You must inform the Instructor that you would like to make an oral presentation at the time you submit your written paper, so that a time for your presentation can be arranged.

Homework and quizzes are 25% of total grade (the lowest homework grade will be dropped). Homework is assigned one week before it is due and must be submitted at the beginning of the class. **Late homework is not accepted.**

Graded exams and homework will be returned in class

Instructor's Recommendation:

The lectures are designed to present important principles, derivations, solutions, and topics (material that will be used for the exams) in a continuous and comprehensive sequence. Also, tutorial information will be provided in class. The tutorial information will be identified from the students' answers to questions asked during class. Therefore, it is highly recommended that you (1) attend every class, (2) take very good notes, (3) rework your notes immediately after class or soon afterwards, and (4) ask me questions during my office hours concerning material in your notes that you do not understand.

Academic Honor Code and Discipline Policies:

Students are expected to have read and understand the University Academic Honor Code and Discipline Policies. Students may discuss homework but must complete the work individually. Of course, all exams and papers must be completed individually and without assistance from others and/or outside sources.

Students called for military duty:

If you are a student in the military with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact Paul Rakowski.

Disability students: If you are a student with a disability, please contact:

THE OFFICE OF DISABILITY RESOURCES AND SERVICES

Arts Building 177, 303-556-3450, TDD 303-556-4766

Disability Resources and Services Office (DRS) serves the needs of a large and diverse community of students with disabilities who attend the University of Colorado at Denver. The DRS staff have a strong commitment to providing equal access and overseeing a full range of accommodations for students with disabilities. The DRS staff also work closely with faculty and staff in an advisory capacity; thereby, assisting in the development of reasonable accommodations that allow students with disabilities to demonstrate their abilities. Accommodations may include: assistance in identifying volunteer note takers, alternative testing (extra time, scribe, reader), textbooks in alternate format (Braille, enlarged, audiotape), priority registration, interpreters and referral to the ACCESS CENTER.

For assistance and/or information, please contact our office located in room 177, Arts Building.

ME 5141 (Viscous Flow) and ME 4141 (Fluid Mechanics)
Spring 2008 (Tuesday and Thursday, 5:30 PM – 6:45 PM)

Course Schedule (TENTATIVE):

- Week 1 - Introduction, shear flow, viscosity, Newtonian fluid (Chapter 1)
- Hagen-Poiseuille flow, mechanism of viscosity; gases & liquids (Chapter 1)
- Week 2 - Lagrangian and Eulerian description, Substantial Derivative
- Derivation of Equation of Continuity (Chapter 3)
- Week 3 - Derivation of Momentum Equation (Chapter 3)
- Body forces and surface forces (Chapter 3)
- Week 4 - Total rate of strain in a fluid, rate of strain tensor and vorticity tensor (Chapter 3)
- Four basic motions of a fluid (Chapter 3)
- Week 5 - Constitutive equation for an isotropic, Newtonian fluid, Momentum Equation
- Derivation of the Mechanical & Thermal Energy Equations (\approx Chapter 12)
- Week 6 - Derivation of the Mechanical & Thermal Energy Equations (\approx Chapter 12)
- Stokes hypothesis and Navier-Stokes Equations (compressible & incompressible)
- Week 7 - Stokes hypothesis and Navier-Stokes Equations (**Short Review**)
- **MID-TERM EXAM (Closed Book & Closed Notes)**
- Week 8 - Navier-Stokes Equations – general properties (Chapter 4)
- Inviscid flows, Euler's Equations, & Bernoulli's Equations
- Week 9 - Parallel flows (Chapter 5)
- Parallel flows (Chapter 5)
- Week 10 - Stokes First Problem (Chapter 5)
- Boundary Layer Equations – derivation (Chapter 7)
- Week 11 - Boundary Layer Equations – derivation (Chapter 7)
- Boundary Layer Equations – derivation (Chapter 7)
- Week 12 - Boundary layer on a flat plate – similarity solution (Chapter 7)
- Boundary layer on a flat plate – boundary layer & displacement thickness (Chapter 7)
- Week 13 - Boundary layer on a flat plate – shear stress & drag (Chapter 7)
- Boundary layer on a wedge – similarity solution (Chapter 9)
- Week 14 - Boundary layer on a wedge – similarity solution (Chapter 9)
- Turbulent flows – general introduction (Chapter 18)
- Week 15 - Turbulent flows – time averaging & Reynolds stresses (Chapter 18)
- Turbulent flows – turbulence models (Chapter 18) (**Short Review**)
- Week 16 - **FINAL EXAM (Closed Book & Closed Notes)**

ME 5141 (Viscous Flow) and ME 4141 (Fluid Mechanics)
Spring 2008 (Tuesday and Thursday, 5:30 PM – 6:45 PM)

**University of Colorado Denver
Downtown Denver Campus**

College of Engineering and Applied Science Spring 2008 Registration and Academic Deadlines

- ☺ *All UCD students are required to have an official UCD email account. To activate your official email account, visit <http://www.cudenver.edu/Admissions/Registrar/> on this page, select "New Email Policy" to enroll. You will need your Student ID and PIN to activate your account.*
- ☺ *ALL students are responsible for completing financial arrangements with financial aid, family, scholarships, etc. DO NOT ASSUME ANYTHING WHEN DEALING WITH YOUR UCD FINANCIAL OBLIGATIONS.*
- ☺ *Students taking any Engineering course MUST FOLLOW ALL PRE-REQUISITE REQUIREMENTS for registered courses. If you do not have the pre-requisite(s) for a course you are enrolled in, you MAY be dropped without notice. The consequences of enrolling in a course without the proper pre-requisites are your responsibility both financially and academically.*
- **January 22** First day of Spring 2008 semester classes.
- **January 27** Last day to add courses using SMART web registration. If your name does not appear on the official class roster, **YOU ARE NOT ENROLLED IN THE COURSE.**
- **January 27** Last day to be added to a waitlisted course.
- **January 28** Last day to drop a course without a drop charge of \$100.00.
- **January 28** Students are responsible for verifying an accurate Spring 2008 registration via SMART.
- **January 29 thru February 6** Course adds using a Schedule Adjustment Form permitted with instructor approval. Drops via SMART system permitted. **Drop charges apply.***
- **February 6 (5:00pm)** Last day to apply for Spring 2008 graduation!!! Treated as an *absolute* deadline. Students **MUST APPLY ONLINE** at <http://thunder1.cudenver.edu/reg/>. Complete the online "INTENT TO GRADUATE FORM".
- **February 6 (5:00pm)** Last day to drop full-term courses with tuition adjustment. **Drop charges apply.***
- **February 6 (5:00 pm)** Last day to add structured courses. Treated as an *absolute* deadline. The February 6 deadline does not apply to independent study, internships, and late-starting modular courses.
- **February 6** Graduate students must submit Application for Admission to Candidacy to Department.
- **March 24-30** Spring Break (no classes; campus open.)
- **March 25** Last day to submit Thesis copies to Graduate School for Format Review. Submit to LSC 300.
- **April 7** Last day to drop a Spring 2008 course for Engineering students **without** an approved petition.
- **May 2** Last day to Submit **FINAL** copies of thesis to Graduate School (LSC 300). **FINAL THESIS COPIES MUST INCLUDE ALL REQUIRED SIGNATURES.**
- **May 2** Last day for Engineering students to drop a course with an approved petition. *Treated as an absolute deadline.*
- **May 12-17** Finals week
- **May 17** End of Semester. Graduation ceremonies held.
- **May 26** Final Fall 2007 grades available on SMART.

*A complete description of the UCDHSC Enrollment and Billing Policy can be obtained online at <http://www.ucdhsc.edu/admin/bursar/billandenroll/>

All Engineering students are solely responsible for obtaining important date and deadline information. Failure to meet deadline dates may interfere with your satisfactory academic progress, Financial Aid eligibility, or your ability to graduate on time. Be responsible, be informed.

For questions or further information, contact Engineering Student Services at 303-556-4768.