

EE 3216 Electronics I

College of Engineering and Applied Science
University of Colorado Denver

Term: Fall 2009

Course time: Tuesday & Thursday 4:00 – 5:15 pm

Course location: NC 2002

Office Hours: Tuesday & Thursday 5:30 to 6:30 pm

Instructor: Prof. Tim C. Lei

Office location: NC 2204C

Phone: (303)556-4924

Email address: tim.lei@ucdenver.edu

Course Design

Catalog Description:

Prerequisite courses: CHEM 1130 General Chemistry
PHYS 2311 General Physics I: Calculus Base
EE 2132 Circuit Analysis I

Corequisite courses: N/A

Course Description:

Understanding the operating principles, characteristics, and their usages of the electronic components are the basic foundation of electronic circuit designs. This course will cover three basic types of electronic components - diodes, bipolar junction transistors and field effect transistors - in details. The course is designed to educate students the electronic characteristics, as well as the electronic modeling of the devices. Applying these electronic devices to practical circuit designs are also emphasized in the course.

Course Objectives:

The learning objective is fundamental semiconductor theory as applied to electronic circuits. Topics include: semiconductor theory, P-N junctions and diode applications, power supply design, transistor (BJT) theory and applications, low-frequency amplifiers, FET and MOSFET devices.

Requirements

Required Texts:

1. Microelectronic Circuits 5th edition, Sedra and Smith, Oxford University Press, ISBN: 0195338839

Recommended Texts:

1. Microelectronics, Millman and Grabel, McGraw Hill

Assignments and Examinations:

The homework assignments are designed to strengthen the understanding the material taught in the class. The assignments are calculation or equation derivation based.

There are two tests, one final and one final design project. There will also be short quizzes during the course.

Assessment Design

Grades:

- Homework assignments: 20%
- Quizzes: 5%
- Test1: 20%
- Test2: 20%
- Final: 25%
- Design project: 10%

A-A⁻: 100-90, B⁺-B: 89-80, C⁺-C: 79-70, D⁺-D⁻: 69-50, F: 49-0

Course Policies:

The assignments are usually due in one week and are required to submit before the lecture of the due date. Derivation steps and logical reasoning shall be clearly stated in all answers and no credit will be given to “one-step final answer” type of solutions.

The two tests will be 75 minutes in duration. The final exam will follow the university final schedule and is 75 minutes. Calculators are required for the exam but calculators with symbolic math capabilities are prohibited. No computers are allowed in exam.

NO LATE HOMEWORKS OR MADE-UP EXAMS WILL BE ACCEPTED OR ARRANGED unless pre-approved by the instructor with a substantial reason, such as family loss or family members in a substantial accident. Sickness can only be accepted as a reason if a doctor’s note is provided. A zero grade will be given to the late or missing homework. Extension from the whole class can be requested but has to be requested before the due time of the homework or the exam. Homeworks and exams will be returned to class within two weeks after hand in.

Students shall adhere to the Student Code of Conduct and the Academic Honor Code and Discipline Policies of University of Colorado Denver. If cheating or plagiarism is found on exams or assignments, a zero will be given to the exams or assignments. Serious cases will be forward to the department or the collage for decisions on penalties.

Class attendance are requires but will not be used to determine grades.

Class syllabus is subject to change but students will be informed for open discussion prior to any changes.

Course Schedule

Week	Date	Topic	Chapter
1	8/18, 8/20	Semiconductor Prosperities	1
2	8/25, 8/27	Ideal Diodes	3
3	9/1, 9/3	PN Junctions, diode equation	
4	9/8, 9/10	Waveshaping circuits	
5	9/15, 9/17	Rectifier circuits	
6	9/22, 9/24	Power supply circuits	
7	9/29, 10/1	Introduction to MOSET	4
8	10/6, 10/8	Small signal analysis	

9	10/13, 10/15	Fall Break and Thanksgiving	
10	10/20, 10/22	JFET compared to MOSFET	
11	10/27, 10/29	Introduction to transistors	5
12	11/3, 11/5	BJT regions of operations and modeling	
13	11/10, 11/12	Bias Circuit Design/Midterm	
14	11/17, 11/19	BJT small signal models	
15		Hybrid pi model, amplifier circuits	
16	12/1, 12/3	BJT amplifier design	
17		Final Week	

Course Communication

The instructor can be reached during regular office hours. Special arrangement to meet with students outside regular office hour can be made in advance. Email is another good way to reach the instructor and emails will typically be replied within 48 hours.

Students called for military duty

If a military service or training has been called upon on a student during the course of the semester, he/she shall contact the instructor and Paul Rakowski for special arrangement.