

ECE 210 – Circuits I

Contact Information:

Instructor: Chris Kreucher, ckreuche@umich.edu
Office Hours: 6 – 7 PM Tuesdays, **and by arrangement**
Website: www.engin.umd.umich.edu/~ckreuche

Text:

Basic Engineering Circuit Analysis 6th edition, J. David Irwin.
The 4th and 5th editions are acceptable as well.

Course Schedule:

Lecture	T/R 4:40 – 6:00 PM
First Class	Thursday 09/07/00
Mid Term	Tuesday 10/26/00
Last Class	Tuesday 12/12/00
Quizzes	Every Thursday 4:40 PM

Lecture Format

- 1) There will be two lectures a week. Attendance is *expected* and, although not specifically taken into account in the grading policy, will be used as a factor if any judgement calls are necessary when assigning grades or granting extensions.
- 2) There will be a short 5-10 minute quiz at the beginning of class every Thursday. You can prepare for the quiz by attending the previous lectures, reading the text book, and doing the assigned homework. It is my policy *not* to give makeup exams or quizzes. However, limited exceptions will be made if and only if an arrangement is made ahead of time.
- 3) Homework will be assigned but not collected. **If the quiz grades indicate that the students are not completing the homework assignments, homework will be collected.**
- 4) I will assign one or two projects that will be individual efforts. The format of the report will be given at the time of the assignment.

Lab Format

- 1) There are 9 scheduled lab assignments. You must download them from the website **before the start of lab.**
- 2) Your lab instructor will explain exactly what is expected of you on the first day of lab.

Grading:

1) Quizzes + Homework (if necessary)	20%
2) Lab and Design Project(s)	40%
3) Midterm Exam	20%
4) Final Exam	20%

UMD Statement on Academic Integrity (Approved August 9, 2000)

"The University of Michigan - Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the university's standards of academic conduct as set forth by the Code of Academic Conduct, as well as policies established by the schools and colleges. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses. Violations will not be tolerated and may result in penalties up to and including expulsion from the University."

The College of Engineering and Computer Science Honor Code

"Students in the College of Engineering and Computer Science abide by the Student Code of Academic Conduct and Honor Code, first established at the College of Engineering of the University of Michigan in 1915, and its subsequent revisions. The Honor Code explains the standards of academic honesty expected of students taking engineering and CIS courses and the importance of ethical standards in the engineering and computer and information science professions.

Students sign an honor code acknowledgement form to verify that they have received the Honor Code Booklet and understand its contents. Students need to have signed the honor code form before being allowed to register. Alleged Honor Code violations are brought before the College of Engineering and Computer Science Honor Council, an elected body composed of undergraduate and graduate students and a faculty advisor."

Course Work Outline

- 1. Basic Concepts**
 - a. Current, Voltage, Power, Work
 - b. Dependent and Independent Sources
 - c. Sign Conventions
 - d. Ohm's Law
- 2. Resistive Networks**
 - a. Series/Parallel
 - b. Voltage and Current Dividers
- 3. Nodal and Loop Analysis Techniques**
 - a. Nodal Analysis
 - b. Super Nodes
 - c. Loop (Mesh) Analysis
 - d. Solution of Simultaneous Equations
- 4. Additional Analysis Techniques**
 - a. Superposition
 - b. Source Transformation
 - c. Thevenin and Norton Theorems
 - d. Maximum Power Transfer
- 5. Operational Amplifiers**
- 6. Energy Storage Elements**
 - a. Capacitors
 - b. Inductors
- 7. AC Steady State Analysis**
 - a. Complex Numbers
 - b. Sinusoids
 - c. Impedance
 - d. Phasors
 - e. AC Analysis Techniques
 - d. Transfer Functions
- 8. Variable Frequency Networks**
 - a. Resonance
 - b. Magnitude and Phase Response
- 9. AC Steady-State Power**
 - a. Instantaneous Power
 - b. Average Power
 - c. Effective/RMS
 - d. Power Factor
 - e. Complex Power
- 10. Magnetically Coupled Networks**
 - a. Transformers