

EE210 Circuits-1

Instructor: Al Davis

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Time and place: MWF, 10:15-11:15am, AB 4104

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Textbook:

Required:

"Electronic Circuits" by Nilsson and Riedel

Web site:

<http://www.kettering.edu/~adavis/class/ee210-circuits-1>

Office hours:

Official office hours are most of the day Thursday. I have an open door policy. If the door is open I am probably available. If I am with someone else, please let me know of your presence. Don't just silently wait outside the door! I am usually also available Monday, Wednesday, Friday 1:30-2:30.

Catalog description:

This is an introductory course presenting fundamental DC and AC circuit analysis techniques. Topics include circuit variables and elements; resistors, inductors, and capacitors; and sinusoidal steady-state analysis with power calculations. Laboratory experience is designed to reinforce the fundamental analysis techniques discussed in class. Prerequisites: PHYS-224,225 (Electricity and Magnetism)

Course outline:

1. Circuit variables (chapter 1) (1 class)
2. Circuit elements (chapter 2) (3 classes)
3. Resistive circuits (chapter 3) (4 classes)
4. Techniques of circuit analysis (chapter 4) (7 classes)
5. Inductance and capacitance (chapter 6) (2 classes)
6. Sinusoidal steady state analysis (chapter 9) (7 classes)
7. Sinusoidal steady state power (chapter 10) (3 classes)
8. Simulation, review, and other stuff (3 classes)

Software and equipment:

Most of the homework will require you to use a circuit simulator to verify your work. I will show how to use GnuCap. I will hand out a disk containing this software, and some other utilities that might be useful. We also have "Accusim", "Saber" and "Eldo" on our Sun system, and a limited version of PSPICE on the PC's. You may use any of these if you want to, but I do not guarantee any results.

I will hand out a self-booting CD containing gnuCap, ng-spice (another simulator), gschem (schematic capture), gwave (graphic waveform viewer), pcb (printed circuit layout), and some other tools. This CD is free software, that you may redistribute.

Lots of information about gnuCap is available at:

<http://www.kettering.edu/~adavis/gnuCap>

A MS-Windows version of gnuCap, without graphics, is available for download from:

<http://www.kettering.edu/~adavis/gnuCap/devel/gnuCap-0.34.exe>

For the lab, you will need to buy the "ECE Breadboard Kit" for \$15. The breadboard kit contains a protoboard, a wire cutter/stripper, and alligator clips. Students may purchase a kit from us in one of two ways:

1. Give the department a check made out to "Kettering University" in exchange for a kit. The kits and the checks will be kept in the main ECE office area. We will not accept cash. Amy Owens will be the primary custodian of the checks and the kits. Genette should be available if Amy isn't.
2. Pay for the kit either by cash or check in the Student Accounts office or in the Cashier's office. The student must bring a receipt to the ECE office to get a kit.

In addition to what is supplied in the kit, I recommend that you have some other tools such as needle nose pliers, a small screw driver, and diagonal cutters. A set of clip leads, with alligator clips, is also worth having.

Grades:

Labs are reported separately as EE211, so they don't count here.

Grades are based on a weighted sum of quizzes, homework, projects, and a comprehensive final, as follows:

8 quizzes, 7% each = 56%

final exam = 20%

homework exercises = 24%

Tests and quizzes:

Quizzes, about 15 minutes long, will be given every Monday. Since there is no quiz on the first Monday, and there is no class on Labor Day, that leaves 8 days for quizzes. There will be no make-ups. Each quiz counts 7% of your grade, for a total of 56%.

There will also be unannounced quizzes. They may be given at any time, and should be considered to be a way to raise your grade. They count only by replacing the score on another quiz.

I will count only the best 8 quizzes. If you miss class, and actually take less than 8 quizzes, the final will substitute for the missing quizzes.

The final consists of the department "assessment exam", and 8 additional questions. It counts at least 20% of your grade. This is a multiple choice test with no partial credit and no curve. I will also count it as a substitute for any quiz score lower than the final.

There will be no full-hour tests.

Homework:

Homework exercises are simple examples to practice and explore the basic concepts of the course. These exercises will be assigned almost every class, and will be due the second class following. You should attempt to do the exercises as soon as possible after they are assigned, when the lecture is still fresh. I will answer questions on it in the following class. Then I may collect it, or part of it, the second following class. It is expected and encouraged that you will work together. Please acknowledge who you work with. For grading, it will be spot-checked. It is easy for you to check your results with simulation, so I expect correct answers. These exercises count 24% of your grade.