

ECE 2100

Fundamentals of Engineering Electronics

Spring 2003 Class Syllabus

Instructor: Arn Stolp
Office: MEB 3256
Phone: U of U: 581-4205
Home: 969-5553 (Only if it's important)
E-mail: arnstolp@ece.utah.edu (I don't check my e-mail very regularly, so it may be a while before I read what you send)
Office hours: My "office hours" are the problem sessions. Otherwise it's catch me if you can. To increase your chances, talk to me in class, or leave a phone message to say when you'd like to see me. I'm usually around until at least 2:00 p.m. M, W, or F. If I'm not in my office, check the lab.

Class Web Site: <http://www2.ece.utah.edu/~ee2100/>

Required books and lab supplies:

Textbook: *Microelectronic Circuits*, 4th Ed. by Sedra & Smith
Lab notebook (bound or spiral)
Super-strip (proto-board)
Lab card to buy parts

Prerequisites:

MATH 2250, PHYCS 2220, and EL EN 2000

Introduction:

Presumably, you're an Electrical or Computer Engineering student. Hopefully you choose your field because you're interested in electronics. So far, you've had math classes and physics classes; chemistry and computers. You've studied circuits, phasors, and transients 'til your eyes went bleary, and now, finally, you're into the good stuff. Here it is, in this class we'll begin to cover the real, active, parts—the ones that make our electronic world come alive. Welcome to ELECTRONICS!

We'll talk about signals and frequencies, amplifiers and converters, op-amps and inverters. We'll talk about diodes—signal diodes, rectifier diodes, zener diodes, photo diodes, and light emitting diodes. And, oh yeah, transistors—BJTs and MOSFETs and CMOSFETs, and JFETS.

We'll, also talk about the circuits that use these parts, circuits that really *do* something. And we'll model those circuits—on paper, and on the computer. If you're interested in electronics, you'll like this class.

I'll teach you concepts and the use of those concepts to solve problems, not just formulas and memorized facts. If you learn the concepts, the electronic world will be yours to command and design and your grade will probably be good. If you try to get along by just memorizing a few formulas, this class will be **HARD**, next year's classes will be even harder, and your grades will probably be disappointing.

This class consists of:

Lectures: M, W & F 8:35-9:25 am in EMCB 102

Lectures set the direction and tone of the class and cover supplementary material as well as the textbook. You will be held accountable for everything discussed in the lectures, so your attendance is important. Sometimes I will hand out lecture notes in class to help you follow along with the lecture. DO NOT use these notes as a substitute for attendance.

Problem Sessions: (Time and place to be determined)

We cover a lot of material in this class and there is rarely enough lecture time to work examples or to answer your questions in detail. I will set up two or three problem sessions and you should try to come to one each week. I will not cover new material in the problem session, so you can get by without coming, but I think you'll find it worth your while.

Homework, homework, and more homework:

100 pts.

The book contains a number of solved examples and exercises which you should work. I will also assign homework to accompany every lecture which you should work and turn in.

Homework will be your main study tool. As such, I'll give you all the answers so that you can check your work immediately. In fact, you will have to self-correct your homework. If you can't get the correct answer, check the web site for corrections, study some more, come to the problem session, ask for help, or see the posted solutions. This semester I'm going to experiment with posting some solutions *before* the homework is due. So, you might ask, "Why is it handed in and 'graded'?" Well, to answer a question with a question, "Would you even do it otherwise?" The grader will usually only check to see that you've done all the problems and that your paper shows the necessary work to get the answer. Only sometimes will the grader check your work in greater detail. That means that so you will have to work neatly and clearly and show all your work. I will accept *some* late homework for *some* credit. Bring it directly to me, and don't do it habitually. Especially: don't get behind and try to hand in a bunch of homework at one time.

You will probably learn more from doing the homework than any other part of this class. If you thoroughly understand the homework, you will know what the class is about, and the exams should give you no trouble.

Computer models (SPICE):

20 pts.

Modeling circuits by hand can get pretty hairy pretty fast. That's why we use computers. You need to learn how to use this important analysis tool. To that end, I'll assign several SPICE projects throughout the semester.

Although these projects aren't worth many points toward your grade, they are **not optional**. For each project that you fail (< 60% score), your final grade will suffer a **half letter drop** (5% of possible points) That should give you some incentive. Be sure to do all the SPICE assignments.

In addition, SPICE models may be part of your labs and possibly some homework.

Labs: MEB 2365

120 pts.

Lab will be held every week starting Thursday, 1/9/03 (if we can) and including the last week. Many of the subjects covered in lab aren't covered anywhere else in class, so make sure you pay attention and read the lab handouts. You will have to keep a laboratory notebook as a requirement of the lab. Your lab TA will collect and grade these notebooks.

Labs are **not optional**. Near the top of each lab assignment you'll find the minimum points required to pass that lab. For each lab that you miss or fail (don't get at least the minimum required points), your final grade will suffer a **half letter drop** (5% of possible points). Be sure to make-up any labs you miss or fail.

This semester I'll be trying something new with some of the labs. These new labs will be broken into sections or experiments, each of which will have a points value. The top of the first page will show a "Minimum points" value and a "Grade base (100%)" value. You can then choose which sections of the lab you would like to do. Once you do enough of the lab to get the minimum required points, you may leave. To get full credit for the lab you have to do more parts and get to the "Grade base (100%)" points value. If you do more than this you can get extra credit. Even if you come to lab unprepared, you shouldn't have too much trouble getting the minimum required points, but if you prepare for the lab beforehand and work quickly, you'll be able to get extra credit. You should, however, at least read and understand all sections of the lab that say "recommended" next to their points value. Knowledge of those sections may be required in future labs or on exams. If all this sounds too complicated, just do the "recommended" sections of the labs and you'll end up with a decent score.

Midterms:

300 pts.

You will take three midterms throughout the semester. They will cover material up to the time of the test. My exams are designed to see if you learned concepts and problem solving strategies and whether you can work with them, sometimes in new and different ways. Don't try to memorize formulas and specific problems. Exams also cover what you learn in the labs. All exams are open book, open notes.

I will make old exams—exams that were given in previous semesters, available on the homework web page before each exam. They can be helpful study aids for my exams, but beware, they may cover different material than ours will. Each semester is a little different. Gabe, in the lab, also maintains files of old exams for this and other classes. You can check them out and copy them at the copier in the lab.

Final: Monday, 4/28/03, 8:00-10:00 AM in the regular classroom

180 pts.

The final will be comprehensive with greater emphasis on the most recent material. There will be a last-chance review of the class Friday, 4/25/03 3:30 PM.

Grades:

	<u>Pts</u>	<u>% of total</u>	<u>Grade</u>
Homework:	100	> 93	A
SPICE:	20	90-93	A-
Labs:	120	87-90	B+
Midterms:	300	83-87	B
Final:	<u>180</u>	80-83	B-
Total:	720	77-80	C+
		73-77	C
Failed SPICE:	-36	70-73	C-
Failed lab:	-36	67-70	D+
Cheating:	-700	63-67	D
		60-63	D-
		< 60	E

If you want any deviations from the normal requirements (say credit for labs, if you're taking the class for a second time) you will need to see me before the work would normally be due and get an agreement *in writing*. You'll need to turn in your copy of the agreement with your final, so I'll remember to grade you properly.

Handouts:

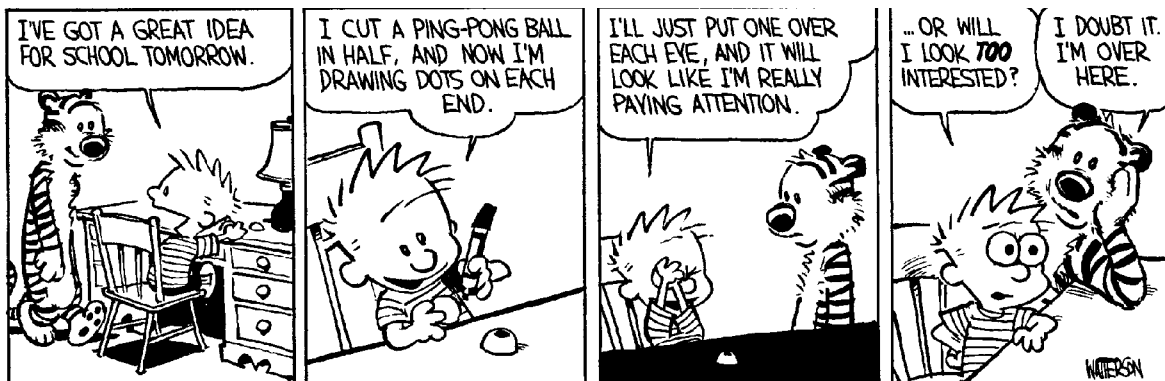
There will be a number of handouts—homework, labs, notes, etc.. I will hand these out before class and/or place them by the doors, look for them as you enter class. I will leave any extras outside my office until they are all gone (my virtual web site). Finally, most handouts will be available on the class web site.

I may put together one or more packages that you will have to buy from the ECE dept.

Americans with Disabilities Act Information:

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD) to make arrangements for accommodations.

All written information in this course can be made available in alternative format with prior notification.



P.S. Are you paying attention??