

ECE 376 ELECTRICAL AND ELECTRONIC CIRCUITS

Course Information & Syllabus for Summer 2008

Revised: June 13, 2008

Instructors:

	Office Hours	Section	Office	Phone	Email
Prof J. Leon Shohet	TBA	Lec 001 8:55-10:10 3534 EH MTWR	1441 EH	262-1191	shohet@engr.wisc.edu
Steve Quick	TBA	Lab 301,302	3542 EH	TBA	squick@wisc.edu
Sherif Tawfik	TBA	Discussion Thursday 1:10-2:25 PM 2540 EH	B642 EH	890-0861	tawfik@wisc.edu

Attendance is important!

Regular classroom attendance is essential; ability to attend the Timetable-posted class times is an important part of your ability to take this course. Owing to the breadth of topics covered, this course progresses rapidly over much material. Missing one day of class may result in missing an entire topic, especially during the summer. Important handouts may be distributed, including homework assignments and announcements made during class time.

ECE 376 Laboratory

The laboratory is an integral part of this course, and will reinforce or complement material covered in class. Many topics are introduced in the labs, whether or not they are also covered in lecture, and you may be asked about those topics in regular course exams.

Homework

There will be two graded homework sets per week. They will typically be assigned in class on Monday and Wednesday and will be due at the start of class the following Wednesday and Monday respectively. Check the Web page and view solutions which will be posted after the homework is due. Late homework will not be accepted – check with the instructor regarding exceptional circumstances – illness or other matters.

Exams

There are 3 exams as follows:

Thursday July 3th (Mid-Term 1)

Thursday July 24th (Mid-Term 2)

Thursday August 7th Final Exam

The two mid terms will be in class unless everyone in the class wishes to have evening mid-terms, and then a review session will be held during the regular class time on those dates.

Grading Policy

The grade for this course is based on:

2 Mid-terms	@20% each	40%
Laboratory		15%
Homework		20%
Final Exam		25%
Total		100%

Textbook

The textbook for this course is Nilsson and Riedel, *Electric Circuits* 8th edition, Prentice Hall (2005). In addition to the material in the syllabus, the laboratory portion of the course will cover Digital Logic Circuits, which is covered in **ECE 376 lecture notes on Digital Logic Circuits by Stremler and Marleau and is available** at Bob's Copy Shop. There are also some additional Lecture notes. The lab instructors will inform you of the lab manual to be purchased at Bob's. You will be required to have the (1) lab manual and (2) digital logic notes while the remaining notes on circuit theory and operational amplifiers are optional.

Exam Policies

Exams in this course are closed-book written exams. It is expected that you will have a calculator with you when you take the exams. **It will be especially valuable to be able to handle complex arithmetic on your calculator for the AC circuits portion.**

Course Objectives

This is an introductory course in electric circuit theory. It is designed for you to not only learn about the basic electrical circuit elements and how to connect them in circuits and find their solutions, but in doing so, you will also learn several basic mathematical techniques that will allow you to solve ordinary linear differential equations. You will find many of these equations appearing throughout your undergraduate and graduate careers and you are urged to pay special attention to this. It will pay big dividends in the future—whether or not you are using circuits.

Tentative Syllabus for the course

Week of June 16 th	Introduction, Organization, Modeling Basic Circuit Concepts and elements, units and dimensions	Chapters 1 and 2
	Voltage and Current Sources, Electrical Resistance, Circuit Models, Kirchhoff's laws, Dependent Sources, Resistors in Series and Parallel, Voltage and Current Division Thursday June 20 - Lecture for Lab "0"	2.1-2.5, 3.1-3.6
Week of June 23 th	Node Analysis Lab "0"	4.1-4.4
	Node Voltage and Mesh Current Methods, Source Transformations, Thevenin and Norton Equivalants, Maximum Power Transfer and Superpositions Thursday, June 27th Lecture for Lab 1	4.5-4.13
Week of June 30 th	Operational Amplifiers Lab 1	5.1-5.7
	Inductors and Capacitors Mid-Term Exam 1-July 3rd Thursday July 3rd Lecture Introduction to PSPICE	6.1-6.5
Week of July 7 th	Inductance and Capacitance Combinations Linearity	6.1-6.5
	More General RL and RC Circuits; Natural response of parallel RLC circuits Thursday July 12th Lecture for Lab 4 Digital Circuits	7.1-7.7
Week of July 14 th	Unit-step forcing functions Step Response of RL and RC circuits Overdamped, Underdamped and Critically damped solutions of parallel RLC circuits Lab 4 – Digital Circuits Thursday July 3rd Lecture for Lab 2	7.1-7.4
	Series RLC circuits and sinusoidal forcing function	9.1-9.2
Week of July 21 th	Phasors, impedance and admittance Circuit analysis using phasors Lab 2 –	9.3-9.5
	Superposition, transformations, Thevenin's and Norton's theorems, Phasor diagrams July 24th Mid-Term Exam 2, July 24th Lecture for Lab 3	9.7-9.9, 9.12
Week of July 28 th	Transformers Power, Power Transfer, RMS, Power factor,	9.10-9.11 10.1-10.6

	Complex Frequency, Laplace Transforms, Inverse Laplace Transforms Lab 3	12.1-12.9
Week of August 4 th	Circuit Analysis in the s domain Voltage/Current Stepping Final Exam, August 7 in class	13.1-13.8

Frequently Asked Questions (FAQ)

I cannot make one or more of the exam times. What do I do?

Three exams have been scheduled during class time, which you are expected to be able to attend. It is your responsibility to be there and because of the very short summer session, it is not possible to schedule makeup exams.

Do I need a calculator that does polar-rectangular conversions?

Yes.

My calculator won't do polar-rectangular. What do I do?

Kindly purchase another calculator. A calculator to do this level of math is as much a requirement for this course as the textbook. The TI-36X is available from UW Bookstore for under \$30.

Can I use my super-programmable graphing calculator?

Ask your instructor if in doubt.

It is the exam and I forgot my calculator. What do I do?

Bring your calculator to the exam. We may be able to supply you with a calculator in an emergency, but don't count on it.

Do I need to attend class?

Students not in class miss what goes on there. Apart from review and exams, we only have a limited number of lectures, so each lecture is very important.

Do I need to hand in the homework?

Homework is 20 percent of the grade.

Can I hand the homework in late?

No – if you need to hand in homework apart from class, you must contact Professor Shohet by e-mail and indicate how and when you are handing it in. Once the homework has been given to the grader and the solutions are posted on the web, it is too late.

I missed my lab section, how do I make it up?

Contact your lab T.A. and contact the lab T.A. of the section you would like to attend for makeup. The Lab T.A. information is posted on the Web page.

I cannot find homework solutions on the Web page.

This one is probably our fault. Please email the TA to resolve this problem.

I got over 90 percent on 2 of the exams and I only did poorly on the 3rd. Why did I get a C?

While the final grade is ultimately at the discretion of the instructor, we do combine scores according to the weighting mentioned in this handout, and when homework and lab scores, which tend to have a high curve, are factored in, a failing performance on one exam could result in a C grade. If there are circumstances of illness, personal problems, family or work responsibilities that you feel affect your performance, please discuss these matters with the instructor. It is critical that you have such discussions prior to the time that grades are turned in. It is against University and Department policy to change grades based on student circumstances once grades are turned in. In addition, you may find the facilities of the McBurney Center helpful to you if you have trouble taking tests. After making an assessment of your test-taking skills, they MAY request that you be given special examination conditions which are designed to help you overcome your difficulties. You must show the instructor an official letter from the McBurney Center requesting special accommodation.