

<http://www.ece.utk.edu/~tolbert/teaching/ece481/index.htm>

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Office Hours: M 1 – 3 p.m.; W F, 10 a.m.- 11:30 a.m.; or by appointment

Class: M W F 9:05 a.m. – 9:55 a.m., 502 Ferris Hall

Final Exam: Tuesday, December 11, 2007, 8 – 10 a.m.

Required Textbook: Mohan, Undeland, Robbins, *Power Electronics: Converters, Applications, and Design*, J. Wiley, 3rd Ed., 2003, ISBN 0-471-22693-9. Available at UT bookstore.

<i>Grading:</i>	Homework	20%	<i>Course Grades:</i>	92 – 100:	A
	Projects	15%		82 – 91:	B
	2 Tests	40 %		72 – 81:	C
	Final Exam	25 %		65 – 71:	D
				0 – 64:	F

Homework:

1. Problem solving is an important vehicle for mastering the material of this course. Homework assignments represent only the absolute minimum practice you need. Working more textbook examples and exercises than the ones assigned will serve you well in learning the material and preparation for exams.
2. Each assignment is due at the beginning of the class on its due date.
3. No late homework will be accepted under any circumstance. Do not ask for exceptions.
4. Getting help (from other students) or collaborating (but not copying!) on homework is encouraged.
5. Use front side of 8 ½” x 11” engineering paper (green ruled paper) only. Staple if there is more than one sheet. Do not fold.
6. Show your work, not just the answer.

Attendance:

1. Attendance is required. Class attendance will be kept.
2. Those with perfect attendance (not missing any classes) will have 2 points added to their final grade for the semester.
3. Each student is responsible at all times to keep abreast of course procedural announcements, obtain handouts, etc. Students must ask the instructor for graded homework, simulations, and tests that were previously handed out in classes for which they were absent.

Tests:

1. Two closed book, closed notes tests are scheduled. The tentative dates are:

Sept. 26

Nov. 2

2. Partial credit will be given solely at the discretion of the instructor.
3. Test grades will only be adjusted if obvious mistakes (totaling of problem scoring) had been made.
4. Make-up for missed tests only given if arranged in advance.

- Other Information:*
1. Information given in this document is subject to change without prior notice.
 2. If you are late or must leave class early, please minimize the disturbance.
 3. Substitute instructors will give lecture when the instructor is out of town. Class attendance will be kept on these days also.

Course Description: Principles and characteristics of power semiconductor devices, dc-dc converters, single-phase and polyphase phase-controlled converters, converter control, ac voltage controller. Includes Level I design projects and laboratory work.

Prerequisites: ECE 316, 325, 336

Course Objectives: Introduce fundamentals of switching devices and circuits. Efficiency of switching electronics, switching frequency and energy storage tradeoffs, and design principles.

<i>Topics Covered:</i>	Power Diodes	Power Electronic Circuit Simulation
	Thyristors	DC-DC Converters
	IGBTs	Inverters
	Power MOSFETs	Losses in Power Electronics Circuits
	Diode Rectifiers	PWM Techniques
	Power Electronics Applications	Harmonics

Fundamentals of Engineering Exam: Please be sure to sign up for and take seriously the “Fundamental of Engineering Exam” when you become eligible (senior in good standing). It is given twice per year (October and April). You can get an application for the exam from the EECS department secretary in Ferris 414. The test is an 8-hour exam given on a Saturday, which you should be able to pass with some studying effort. This year’s test dates are October 27, 2007 and April 12, 2008 with an application deadline of September 1, 2007, and February 1, 2008, respectively. Cost for the test is \$50.

Passing the FE Exam is the second step toward becoming a registered professional engineer. The first step is graduating with an ABET-accredited engineering degree. Two web sites that have more information on the FE Exam and how to become a professional engineer:

<http://www.state.tn.us/commerce/ae.html>

<http://www.ncees.org/>