NORTHERN ARIZONA UNIVERSITY

Electrical Engineering Department

Course Syllabus: EE 188 Electrical Engineering I

Semester: Spring 2007
Credit hours: 3
Course web page: www2.nau.edu/~pam7/EE188 ← *see for ASSIGNMENTS & DATES*
Class times: Lecture MWF 10:20 – 11:30 room 101, Engineering sequence 3738

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Home page: http://www2.nau.edu/~pam7

COURSE STRUCTURE/APPROACH

Electrical Engineering I is a lecture course that focuses on circuit theory and its application to solving for the current, voltage, power and energy associated with various DC and AC circuits. Material and examples presented are geared to all engineering students as much as possible. Knowledge of circuit theory and concepts and the ability to solve circuit problems are stressed during in-class collaborative activities, in-class quizzes, homework, and tests. Website resources and the textbook contain many example problem solutions. The laboratory is graded separately from the lecture section, but emphasizes and reinforces many of the same concepts and information from a laboratory viewpoint. You do not need to take the laboratory class during the same semester as the class and you may drop the class without dropping the lab or vice versa.

REQUIRED TEXT

Textbook – *Basic Engineering Circuit Analysis* by J. David Irwin and R. Mark Nelms, 8th Edition, Wiley, ISBN 0471487287.
Textbook Website - http://edugen.wiley.com/edugen/class/cls13085/
eGrade Plus comes free with a new textbook or is available separately for approximately $43.95, and is required. eGrade Plus provides complete electronic access to the textbook. CENS computer account – see the CENS IT help desk or call 523-8084. This provides you access to the electronic class folder and login for computers in the laboratories.

> **Lectures will occasionally include material not found in the textbook. You are responsible for all material discussed in class or assigned in the text.**

COURSE CO-REQUISITE:

MAT 136, Calculus I. Providing false information about prerequisites (i.e. incorrectly claiming that you have met the prerequisites) will be considered academic dishonesty.

PRE-REQUISITE SKILLS

- Algebra and trigonometry (skilled)
- Complex number arithmetic (familiar)
- Principles of physics (familiar)

COURSE DESCRIPTION

Introduction to electrical engineering including DC and AC circuit analysis, operational amplifiers, transducers, transformers, and AC power.

ASSESSMENT OF STUDENT LEARNING OUTCOMES
Upon successful completion of this course, each student will be able to describe the characteristics and applications for the following:
- Definitions, laws and theorems governing electrical systems and circuits
- The analysis process for direct current (DC) and alternating current (AC) steady state circuits
- Electrical components like resistors, capacitors, inductors, voltage sources, current sources, transducers, op amps and transformers in electrical systems
- Single and three-phase power, power factor correction and maximum power.
- Frequency response, sinusoidal waveforms, and analog filtering.

These will be assessed by in-class quizzes, homework and exam questions.

Successful students will also have the ability to do the following:
- Analyze steady-state DC and AC electrical circuits consisting of resistors, inductors, capacitors, independent and dependent voltage and current sources, ideal transformers, and ideal operational amplifiers
- Develop Thevenin and Norton equivalent circuits and use them to better understand and model the behavior of electrical circuits.
- Perform power calculations for DC electrical circuits and for AC single phase circuits with complex loads.

These will be assessed by in-class quizzes, homework and exam questions.

COURSE GRADING
The course grade will be based upon two mid-term exams, homework, quizzes, a comprehensive final exam, and satisfaction of the TIMES math skills assessment. Grades will be based not only on technical content but also on presenting your work in a well organized, neat, clear, and professional manner using standard technical terms and symbols.

Exam 1	100 points	@ approx. the 6th week
Exam 2	100 points	@ approx. the 11th week
Final exam	150 points	
Quizzes	30 points	10 points each, only your best three scores count
TIMES req.	20 points	satisfy all portions of the math skills assessment
Homework	100 points	total homework will be scaled to 100 points possible
Total	500 points	

Final grades will be determined by the following percentages:
        A = 90+,   B = 80-89,   C = 70-79,   D = 60-69,   F = below 60
At the professor's discretion, grading thresholds may be adjusted downward.

LATE WORK, MAKE-UP WORK
Assignments are not accepted late. Assignments are due at the beginning of class unless otherwise stated. No make-up exams except by prior arrangement involving exceptional, unavoidable, emergency situations. Please contact the professor immediately if such a situation arises.

QUIZZES
During at least 4 regular class periods throughout the semester, a short quiz will be given. Each is worth 10 points, but only your 3 highest quiz scores will count toward your final grade; the remainder will be dropped. Quizzes will not be announced in advance. Also, they

may occur anytime during the class period: beginning, middle, or end. If you are not present when a quiz is given, you will receive a zero for that quiz. No make-up quizzes will be allowed under any circumstances. Suggested strategy: keep current, attend class, and be ready.

TIMES: Training Intuition in Math for Engineering Success
Early in the semester, you will be given an exam aimed to assess your skills in several important math preparation topics. This exam is pass/fail. If you pass all areas, you will have satisfied the TIMES requirement and no further action is needed. If not, you will be informed which topic areas require addressing. Guidance and instruction will be provided to help you reinforce the necessary skills and evaluate when they meet the required level. Before the semester ends, you must satisfy all topic areas. NOTE: This is an ongoing research project into engineering education. Although you can choose not to participate as a research subject (meaning your data will not be included in any publications), you must still satisfy the requirements for adequate skills in all topic areas as part of this course.

WEBWORK
Most of the homework will be completed, submitted, and graded electronically on the web. Instructions for accessing the webwork materials will be posted on the course web page.

ACADEMIC DISHONESTY
Incidents of cheating, plagiarism, or other forms of academic dishonesty are treated quite seriously. The NAU policy on academic dishonesty in Appendix G of the current Student Handbook will apply. You are an engineering professional in training. You are expected to adhere to high ethical standards of behavior. Inform me (anonymously is fine) of any dishonest behavior so I can take appropriate steps to ensure fairness to the class. Copying from another person's homework or test paper is an example of dishonest behavior. However, it is acceptable to work with another student on homework.

NEED EXTRA HELP?
I want you to succeed in this course! I'm willing to help you in any reasonable way I can. If you're beginning to have difficulty, please contact me before the situation deteriorates. Talk to me after class, see me during office hours, or call me for an appointment.

UNIVERSITY POLICIES (links to these are posted on the course website)
- Safe Environment
- Students with Disabilities
- Institutional Review Board (use of human subjects)
- Academic Integrity
- Academic Contact Hour
- Classroom Management
- Accommodation of Religious Observance and Practice
- Evacuation
- Engineering Professional Code of Ethics

Instructions for purchasing access to the EE188 online textbook

The online version of the textbook is 60% off the cost of a new textbook, which retails for $124.95. **You do not have to purchase this if you bought a textbook. The website below also has a link to the student companion website that has many helpful features, like answers to selected problems, etc.**

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NOTE: We have seen some discrepancy between the online textbook and the printed one when it comes to homework problems. In some cases, the problem numbers do not agree. If you use the online textbook, make sure you are doing the correct homework problems as assigned in the printed textbook.

Step One: Click on
http://he-cda.wiley.com/WileyCDA/HigherEdTitle/productCd-0471487287,courseCd-E50400,pageType-techsol,page-6.html

Step Two: Click on the **Wiley Desktop Editions** link

Step Three: Download the VitalSource Bookshelf software and the 7 day free trial