EECS 211 – Circuits I (Spring 2008)

MWF 9:00 a.m. - 9:50 a.m.
Room 3150 Learned Hall
KU course # 55783
class website: www.cresis.ku.edu/~callen/EECS211.htm

Instructor: Prof. Chris Allen

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Office Hours: Room 3024 Eaton Hall: Mondays, Wednesdays, Fridays
8:15 - 8:50 a.m. and 10:00 - 10:30 a.m. or by appointment

Catalog Listing: EECS 211 – Circuits I (3)
Analysis of linear electrical circuits: Kirchhoff's laws; source, resistor, capacitor and inductor models; nodal and mesh analysis; network theorems; transient analysis; Laplace transform analysis; steady-state sinusoidal analysis; computer-aided analysis.
Corequisites: MATH 220, and MATH 290.

Course Objective: This course is designed to give sophomores in electrical and computer engineering the basic tools and techniques for analyzing linear electrical circuits and to develop student proficiency in the use of these tools and techniques.

Required Text: *Basic Engineering Circuit Analysis*, 9th edition by J. David Irwin, J. Wiley & Sons, 2008
Pspice For Basic Circuit Analysis, 2nd edition by Joseph Tront, McGraw Hill, 2007

Required Software: *OrCad Capture CIS* (which runs Pspice) is available on EECS network computers under the program heading "Cadence PSD" A limited, Windows™ version of this software is included in the Pspice text.

Grading: The following factors will be used to arrive at the final course grade

Homework & Quizzes	20 %
Exam I	25 %
Exam II	25 %
Final Exam	30 %

Grading Scale: Grades will be assigned to the following scale:

A	90 - 100 %
B	80 - 89 %
C	70 - 79 %
D	60 - 69 %
F	< 60 %

These are guaranteed maximum scales and may be revised downward at the instructor's discretion.

Homework: Homework will be collected at the beginning of class on a roughly weekly basis. Collaboration with classmates is permitted. Copying is not permitted.
Homework papers should address one problem per page (although multiple pages may be used for a single problem) and work should be on one side of the paper only.

Exams: No make-ups for missed exams will be given. The score for a missed exam will be 90% of your other exam score.

Ethics Policy: Academic misconduct will not be tolerated. It may result in a failing grade and may result in further disciplinary action by the University. For details see the Academic Misconduct section of the Timetable.

Students with Disabilities Policy: Any student in this course who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation in this course and your college experience.

Plagiarism: The issue of digital plagiarism has raised concerns about ethics, student writing experiences, and academic integrity. KU subscribes to a digital plagiarism detection program called Turnitin.com, which may be used to check papers submitted in this course. You may be asked to submit your papers in a digital format so that your paper can be checked against web pages and databases of existing papers. Although you may never have engaged in intentional plagiarism, many students do incorporate sources without citations; this program can alert me to your academic needs.

Exam schedule: Exam I – Friday Feb 29
Exam II – Wednesday April 23
The final exam is scheduled for 7:30 a.m. to 10:00 a.m. on Tuesday May 13, 2008.

Prerequisites by Topic:

- Differential and integral calculus.
- Concurrent study of simultaneous linear algebraic equations.
- Concurrent study of differential equations, including solution by Laplace transforms.
- Sufficient computer familiarity to be able to use the PSpice computer-aided circuit analysis package.

Course Outline: (subject to change)

1. Basic electrical variables, elements, and relationships (2)
2. Analysis of simple networks (3)
3. Nodal and mesh analysis (3)
4. Operational amplifiers (2)
5. Network theorems: linearity, superposition, source transforms, Thevenin/Norton equivalents, maximum power transfer (3)
6. Capacitors and inductors (2)
7. Sinusoidal steady-state analysis (4)
8. First-order transient analysis: natural, forced, pulse responses (5)
9. Laplace transform circuit analysis (4)

Outcomes: Students should be capable of:

- Applying the basic definitions and identities for voltage, current, charge, power and energy.
- Writing proper Kirchhoff's equations for any circuit in both the time- and frequency domains (Laplace transform domain and phasor domain).
- Writing proper Kirchhoff's equations in terms of the basic time-domain and frequency-domain (Laplace transform domain and phasor domain) current-voltage relations for linear resistors, capacitors, inductors, and both dependent and independent voltage and current sources.
- Solving sets of 2 or 3 simultaneous linear circuit equations using matrix or determinants methods.
- Applying the following circuit theorems and techniques: Thevenin and Norton equivalences, superposition, and ideal op-amp method.