ELEC 2110 – ELECTRIC CIRCUIT ANALYSIS

2006 Catalog Data:  ELEC 2110. ELECTRIC CIRCUIT ANALYSIS (3) LEC. 3. Pr., PHYS 1610, COMP 1200 or COMP 1210. Coreq., MATH 2650, ENGR 1110. Basic laws and concepts; resistive circuits; first-order transient circuits; phasors and frequency response of circuits; RMS values and complex power.


Coordinator:  R. M. Nelms, Professor of Electrical & Computer Engineering

Course Objectives:
1. To be able to apply circuit analysis techniques to DC and AC circuits.
2. To be able to solve first-order transient circuits.
3. To be able to calculate power in DC and AC circuits.

Prerequisites by topic:
1. Analytic geometry and basic principles of calculus such as differentiation and integration.

Topics: Class schedule (50 minute classes):
1. Basic concepts and Ohm’s law (3 classes)
2. Kirchhoff’s laws (1 class)
3. Single-loop and single-node pair circuits (2 classes)
4. Nodal and mesh analysis (6 classes)
5. Linearity and superposition (3 class)
6. Source transformations (1 class)
7. Thevenin’s and Norton’s theorem (4 classes)
8. Maximum power transfer (1 class)
9. Capacitance and inductance (1 class)
10. First-order transient circuits (5 classes)
11. AC circuit analysis (7 classes)
12. Power, power factor, and RMS (6 classes)
13. Variable frequency circuits (2 classes)
14. Exams (3 classes)

Typical method for evaluating student performance:
Homework 10%
Exams (3) 60%
Final exam 30%

Computer usage: Students are encouraged to use programs such as MATLAB or Excel to solve homework problems.

Class attendance: Class attendance and its effect on course grade is the prerogative of the individual instructor and will be part of the course outline and announced the first day of class.

Policy on unannounced quizzes: Unannounced quizzes and their effect on course grade are the prerogative of the individual instructor and will be part of the course outline and announced the first day of class.

Students who need special accommodations should make an appointment to discuss their needs as soon as possible.

Contribution of course to meeting the professional component
Engineering topics: 3 credits
100% engineering science (3 credits)

Primary program outcomes related to this course:
Outcome 1: Ability to apply knowledge of math, science and engineering to solve problems.