ECE 212: Electronic Circuits and Systems

Required Course


Credit: 3 hours
Prerequisites: PHYS 207 or taken concurrently; MATH 374


Reference Materials:

Course Coordinator: Dr. John L. Mason, Associate Professor, ECE

Instructor (Fall 2004): Ms. Deborah Dawson, Adjunct Assistant Professor, ECE

Prerequisites by Topic:
1. Basic knowledge of electric and magnetic fields
2. Linear algebra
3. Differential equations

Course Objectives and Learning Outcomes: This course develops the students’ ability: (objectives include listing of relevant ECE Department undergraduate learning outcomes)

1. to understand basic concepts of circuits, current, and voltage (a,e);
2. to understand the concepts of power and energy in electric circuits (a,e);
3. to understand the current-voltage relationships for ideal resistors, inductors, and capacitors (a,e,k);
4. to understand how real resistors, inductors, and capacitors deviate from the ideal components (a,e);
5. to analyze networks of components by systematic methods (a,e,k);
6. to understand first and second order transients in circuits (a,e,k);
7. to determine the frequency response of a circuit (a,e,k);
8. to analyze AC circuits using complex numbers and phasors (a,e,k); and
9. to analyze operational amplifier circuits using the ideal op-amp model (a,e,k).

Topics:
1. Current and Voltage (1 class)
2. Basic Circuits (2 classes)
3. Resistive Network Analysis (4 classes)
4. AC Circuit Analysis (4 classes)
5. Power in AC Circuits (2 classes)
6. Frequency Response (2 classes)
7. Transients (4 classes)
8. Operational Amplifier Circuits (4 classes)
Course/Laboratory Schedule: 3 hours lecture

Evaluation:
1. Examinations (80%) 2. Short Quizzes (15%) 3. Homework (5%)

Communication Skills:
Homework must be submitted in a specified format.

Contribution to Professional Component:
ABET professional component as estimated by faculty member who prepared this course description:
Engineering Science: 3 credits or 100%

Relation of Course to Program Outcomes:
This course provides significant support for:
EE program objectives: 2,3 and
ECE expected learning outcomes: a,e,g,k

Person who prepared this description and the date of preparation:
Prepared by: John L. Mason Date: July 22, 2004