EE-2110
Electric Circuits

Curricular Designation: EE: required  CpE: required

Catalog Description:
EE 2110 - Electric Circuits Introduction to linear circuit analysis, circuit elements, network theorems, steady-state sinusoidal response, transient response using LaPlace transforms, and frequency response. 
Credits: 3.0 Lec-Rec-Lab: (3-0-0) Semesters Offered: Fall Spring Summer Pre-requisites: EE 2150 and (MA 3520 or MA 3521 or MA 3530 or MA 3560)

Textbooks(s) and/or Other Required Materials:
1. Basic Engineering Circuit Analysis by J.D. Irwin, Wiley, 2002

Prerequisites by Topic:
1. Familiarity in solving linear algebraic equations.
2. Familiarity with complex numbers and complex number arithmetic.
3. Familiarity in solving 1\textsuperscript{st} and 2\textsuperscript{nd} order differential equations with constant coefficients.

Course Objectives:
1. Mastery of dc circuit analysis by node and mesh methods.
2. Mastery of ac circuit analysis using phasors.
3. Familiarity with network theorems including superposition and Thevenin’s equivalents.
4. Introduction to the transient analysis of source-free and dc-driven first-order circuits.
5. Introduction to the transient response of second-order series and parallel R-L-C circuits from the characteristic equation.
6. Introduction the use of the LaPlace transform in circuit analysis.
7. Introduction to resonance in series and parallel R-L-C circuits and an introduction to Bode magnitude plots.
Topics Covered:
1. Circuit elements, sources, variables and laws (Kirchhoff's, Ohm's)
2. DC circuit analysis by node and mesh methods.
4. Inductors and capacitors.
5. Transient analysis of first-order circuits.
6. Transient response of second-order circuits.
7. Phasors and phasor analysis of ac circuits.
9. The LaPlace transform and its application to circuit analysis.
10. Resonance and Bode magnitude plots.

Relationship of Course to Program Objectives (See UPAC SOP, Tables 1 and 2):
- **CpE**: Outcome: a, p, n, s via topic(s): (all)
- **EE**: Outcome: a, m via topic(s): (all)

Contribution of Course to Meeting the Professional Component:
- **EE**: Engineering Topics
- **CpE**: Engineering Topics

Class/Laboratory Schedule (note: 1 hour = 50 minutes):
Lecture: 45 hours = 3 hours/week for 15 weeks

Prepared by:
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