EEO271: Electrical Circuit Analysis I

Spring, Summer

2013-2014 Catalog Description:

Electrical circuit analysis. Kirchoff's Law, Ohm's Law, nodal and mesh analysis for electric circuits, capacitors, inductors and steady-state AC; transient analysis using Laplace transform. Fundamentals of AC power, coupled inductors and two-ports.

Course Designation: Required

Text Book: D.E. Johnson, J.R. Johnson et.al., Electric Circuit Analysis, 3rd edition, Wiley, 1999.

Prerequisites: Calculus I and EEO major.

Instructor: Thomas Robertazzi

Goals:

To teach students how to analyze and design passive electrical circuits and circuits with op-amps.

Objectives: Students should be able to: 1) analyze and design circuits with resistors, capacitors, inductors, voltage sources, current sources and op-amps 2) be able to understand and use AC phasor concepts to analyze and design electric circuits 3) understand basic AC power and d) be able to understand and use Laplace transform concepts for circuits.

Topics Covered:

Week 1.	Chapter 1 and 2: Introduction and Resistive Circuits
Week 2.	Chapter 3: Dependent Sources and Op-Amps
Week 3.	Chapter 4: Analysis Methods
Week 4.	Chapter 5: Energy-Storage Elements
Week 5.	Review for Midterm
Week 6.	Midterm
Week 7.	Chapter 8: Sinusoidal Sources and Phasors
Week 8.	Chapter 9: AC Steady-State Analysis
Week 9.	Chapter 10: AC Steady-State Power
Week 10.	Chapter 12: The Laplace Transform
Week 11.	Chapter 12 (continued)
Week 12.	Chapter 13: Circuit Analysis in the s Domain
Week 13.	Chapter 13 (continued)
Week 14.	Review and Final.

Class/laboratory Schedule: 3 lecture hour and 1 recitation hour (problem solving) per week.

Student Outcomes and Assessment	% contribution
✓ (a) an ability to apply knowledge of mathematics, science and engineering	40
❑ (b1) an ability to design and conduct experiments	
❑ (b2) an ability to analyze and interpret data	
❑ (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
❑ (d) an ability to function on multi-disciplinary teams	
✓ (e) an ability to identify, formulate, and solve engineering problems	40
❑ (f) an understanding of professional and ethical responsibility	
❑ (g) an ability to communicate effectively	
❑ (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
❑ (i) a recognition of the need for, and an ability to engage in life-long learning	
❑ (j) a knowledge of contemporary issues	
✓ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	20
❑ (l)) an ability to communicate and/or collaborate effectively online	

Document Prepared by: Thomas Robertazzi on 1/22/14