ECE 3306 Electric Circuits II

Credit / Contact hours: 3 / 3

Course coordinator: Mary Baker

Textbook(s) and/or other required material: Electric Circuits, 10th edition, Nilsson and Riedel, Prentice Hall

Catalog description: ECE Circuits II (3:3:0). Prerequisite: ECE 3302. This course is a continuation of methods of circuit analysis, including higher order circuits, filter circuits, inductively coupled circuits, three-phase circuits, and two-port networks. The course includes Laplace analysis techniques and frequency (Bode) plots, as well as computational methods for analysis like Matlab and PSPICE.

Pre-requisite(s) or co-requisites: ECE 3302

Designation: Elective for Computer Engineering; Required for Electrical Engineering

Course learning outcomes: Upon completion of this course, students should be able to do the following:

- Take a Laplace transform and inverse transform and apply Laplace transform methods to circuit analysis
- Analyze and design active and passive filter circuits
- Use Matlab and a circuits simulator to design and analysis problems
- Analyze three phase and magnetically coupled circuits
- Construct frequency response (Bode) plots
- Determine two-port network parameters

ABET Student Outcomes addressed: a, c, e, and k.

Topics covered

- Step and Impulse functions, Laplace Transform 3 hours
- Inverse Transforms, Laplace applications 3 hours
- Initial and Final Value Theorem, Transfer function 3 hours
- Laplace analysis of circuits 3 hours
- Active and Passive Filters 8 hours
- Bode Plots 3 hours
- Matlab and Pspice use 2 hours
- Advanced Filter Circuits (Bworth, etc) 3 hours
- 3 phase circuits 4 hours
- Magnetically coupled circuits and transformer 6 hours
- 2 port networks 3 hours
- Tests 4 hours