

## ECE 3306 Electric Circuits II

**Credit / Contact hours:** 3 / 3

**Course coordinator:** Mary Baker

**Textbook(s) and/or other required material:** Electric Circuits, 10<sup>th</sup> 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