Introduction to Analog Systems and Circuits Lab for Transfer Students

ECE 2027

Credit Hours:
0.50 - 0.50

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lab

Course Description:
Laboratory-only component of ECE 2020, for transfer students. Laboratory practice with circuit theory, analog systems, and applications of passive components and Op amps.

Prerequisites and Co-requisites:
Prereq: 2021, and CPHR 2.00 or above.

Course Goals / Objectives:
- Be competent in implementing circuits using Ohm's Law, Kirchhoff's laws and superposition
- Be competent in implementing RC, RL, and RLC circuits and characterizing their steady state and transient behavior
- Be competent in implementing simple active filters based on ideal Op amps and characterizing their behavior
- Be familiar with how to use modern computer tools for analog simulation
- Be competent in how to use laboratory instruments and laboratory methodology
- Be competent with methodology for critical troubleshooting skills
- Be competent in reporting standards
Course Topics:
- Introduction to Lab Equipment, troubleshooting skills
- Ideal op amp, feedback, active filters, cascaded active filters
- RC and RL first-order circuits, natural and total response, RC Op amp circuits
- Initial and Final Conditions, Series and Parallel RLC, General solution of second-order circuits
- RC, RL, RLC frequency response vs transient response
- Bode Plots, Passive and Active Filters
- Multisim circuit analysis

Designation:
Elective
Required