Introduction to Analog Systems and Circuits Lab for Transfer Students

ECE 2027

Credit Hours:
0.50

Course Coordinator:

Course Length:
14 weeks (autumn or spring)
12 weeks (summer only)

Representative Textbooks and Other Course Materials:

<table>
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<tr>
<th>Title</th>
<th>Author</th>
<th>Year</th>
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<td>Circuits</td>
<td>Ulaby and Maharbiz</td>
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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.

Designation:
Elective
Required

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