

# Lab Modules for Electrical and Computer Engineering Students

## Project

During my time as an ECE student, I've seen multiple ways of creating labs as learning tools, and I wanted to create my own set of labs. I wanted to fill in the gaps for different types of learners, so we can retain more people in the program.

These labs are geared towards students who are hands-on learners and are made to inspire curiosity around electrical circuits. Many students join the program with this curiosity, but some students struggle with maintaining this curiosity throughout their academic experience.

I've built in opportunities to strengthen core concepts in circuit theory, verbal and written communication, networking with other students, and methods for analysis and design

I also didn't want to intrude on anything any professor has done. I just wanted to create materials they can choose to use, either as a main part of their class, class projects, or extra-credit opportunities.

## System

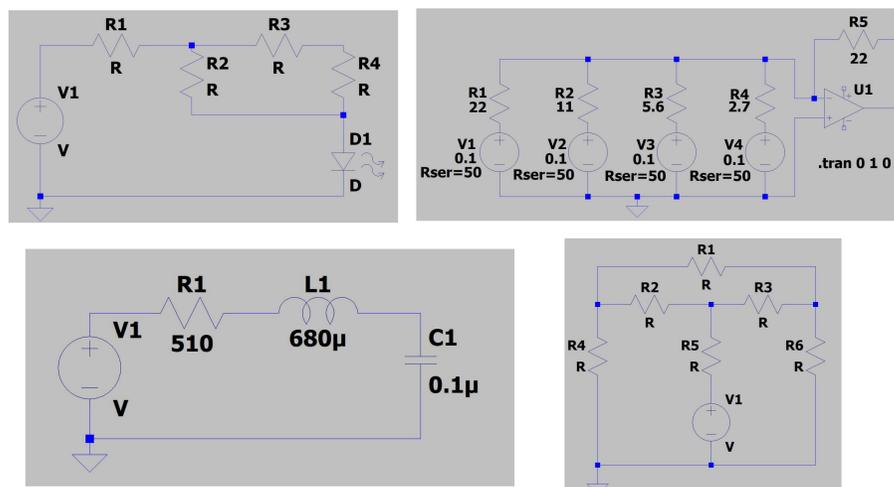
Circuits I	Circuits II	Electromagnetics I
Ohm's Law and Combining Resistors Mesh/Nodal Analysis Thevenin and Norton Circuits (DC) Operational Amplifiers Capacitors Inductors Second Order Circuits Thevenin and Norton Circuits (AC)	Passive Filters Active Filters	Static Magnetic Field of the Earth Electrostatics Magnetostatics Electric Motor and Generator

## Methods

I implemented a questions-based, exploratory approach to labs

I used available parts here at the university, so these can be flexible in their use

Examples:



## Conclusion

I hope to be able to implement these labs in the future and use them as a starting point to make better educational materials

I learned a lot about returning to the basics and writing instructions for people who are learning new things

