

# Biomedical Electronic Measurements

BME253L (Fall 2025)

## Table of contents

| Module   | Materials  | Assessment   | Lab Exercise                            |
|--|--|--|---|
| Resistive Circuit Analysis                       | -> Introduction to Circuits -> Ohm's Law, KCL & KVL, Resistive Loads, Meters -> Equivalent Resistance -> Circuit Analysis Approaches -> Source Equivalents | -> Software Installation & Tutorials -> Problem Set 01 -> Problem Set 02 -> Problem Set 03 | -> Introduction -> Ohm's Law & Power    |
| ECAD (KiCad)                                     | -> ECAD using KiCad: Schematic Capture -> ECAD using KiCad: SPICE Modeling   |  | -> Schematic Capture & SPICE Simulation |
| Midterm I (Sep 22, 2025)                         |  |  |   |
| Capacitors & Inductors DC RC/RL Circuit Analysis | -> Reactive Components: Capacitors & Inductors   | -> Problem Set 04  | Capacitors, Inductors & Oscilloscopes   |
| Complex Impedance, AC Signals, Phasors           | -> Sinusoidal Signals -> Complex Impedance   |  | Impedance                               |

| Module  | Materials  | Assessment        | Lab Exercise  |
|---|------------|-------------------|---|
| AC RLC Circuit<br>Analysis Passive<br>Filters Transfer<br>Functions & Bode<br>Plots (Frequency<br>Domain)<br>Transient Response<br>(Time Domain)<br>Midterm II (Oct 27,<br>2025)<br>Operational<br>Amplifiers & Active<br>Filters<br>Transformers &<br>Diodes<br>Midterm III (Dec 03,<br>2025)<br>Wheatstone Bridge | -> Filters | -> Problem Set 05 | Filters<br><br><br><br><br><br>Transient Response<br><br><br>Opamps<br><br><br>Transformers &<br>Diodes<br><br><br>Wheatstone Bridge:<br>Temperature<br>Measurement |
| Final Lab Practical<br>(Dec 10, 2025)   |            |                   |   |