## **Biomedical Electronic Measurements**

BME253L (Fall 2025)

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

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