

EE 231

1. **Course Number & Name:** EE 231, Electronics I Laboratory
2. **Course Credit and Contact Hours:** 1 Unit, 3 hours
3. **Course Coordinator:** Dr. Mohamed Salem
4. **Textbook:** None
5. **Supplemental Materials:** Lab instructional materials
6. **Specific Course Information:**
 - a. **Description:** Laboratory work to accompany EE 230. Computer-assisted design of electronic circuits involving devices such as diodes and transistors. De-sign, building, and testing of electronic circuits such as filters, oscillator, amplifiers, etc.
 - b. **Prerequisites:** EE 220 and EE 221, MATH 211, and CS 115
 - c. **Co-Requisite:** EE 230
 - d. **Status:** Required for EE program, Elective, Selected Elective
7. **Specific Goals for the Course:**
 - a. **Specific outcomes of instruction:** Upon successful completion of this course the students will be able to:
 - i. Design, test, debug, and analyze circuits using operational amplifiers, diodes, and transistors
 - ii. Measure and analyze I-V characteristics of diodes, and MOS and bipolar junction transistors (BJTs)
 - iii. Utilize simulation tools to model and analyze circuits and semiconductor devices
 - iv. Write lab reports, perform lab demos, and do presentations
 - b. **This course supports the following ABET Student Outcomes:**
 - i. *SO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*
8. **Brief List of Topics to be Covered:**
 - a. Circuit simulation software
 - b. Amplifier circuit modeling
 - c. Non-ideal operational-amplifier circuits

- d. Diode circuits
- e. Metal-oxide-semiconductor field-effect-transistors (MOSFETs) I-V characteristics
- f. MOSFET dc-biasing
- g. Bipolar junction transistors (BJTs) I-V characteristics
- h. BJT dc-biasing