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. Design, 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