

## EE 334L

1. **Course Number & Name:** EE 334L, Microelectronic Circuits 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 334. Computer aided design of integrated circuit (IC) amplifiers. Design, building, and testing of current mirrors, current sources, gain cells, and cascode amplifiers. Design, building, and testing of differential and multistage IC amplifiers.
  - b. **Prerequisites:** EE 230, EE 231 and MATH 241
  - c. **Co-Requisite:** EE 334
  - 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. Assemble electronic circuits using a breadboard, resistors, capacitors, diodes, and transistors.
    - ii. Measure the gain, input resistance, and output resistance of discrete circuit amplifiers using laboratory instruments.
    - iii. Assemble a circuit and measure the output current of a transistor-based current source and mirror.
    - iv. Assemble a circuit and measure the frequency response of an amplifier.
    - v. Develop critical thinking skills through electronic circuit analysis and design.
  - 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. Common-emitter amplifier
- b. Common-base amplifier
- c. Emitter-follower amplifier
- d. Common-source amplifier
- e. Common-gate amplifier
- f. Source-follower amplifier
- g. Current sources and mirrors
- h. Differential amplifiers
- i. Multistage amplifiers
- j. Frequency response of amplifiers