

EE 110

1. **Course Number and Name:** EE 110, Introduction to Engineering and Laboratory Experience
2. **Course Credit and Contact hours:** 1 unit, 3 hours
3. **Course Coordinator:** Dr. Mohamed Salem
4. **Textbook:** None
5. **Supplemental Materials:** Laboratory instructions and information is provided.
6. **Specific course information:**
 - a. **Description:** This course is designed to introduce principles of engineering to the students and expose them to the electronics and computer lab environment. The students are given opportunity to design and build some simple analog and digital circuits and make measurements using various types of lab equipment.
 - b. **Prerequisites:** Must be eligible to enroll in MATH 45 or MATH 161. Instructor's consent is required for co-enrollment in EE 112
 - c. **Co-Requisite:** None
 - 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. Apply basic electric circuit concepts to understand the behavior of simple electric and electronic circuits.
 - ii. Assemble electric circuits using a breadboard, resistors, capacitors, diodes, and transistors.
 - iii. Measure the values of resistors and capacitors using laboratory instrument
 - iv. Construct DC and AC circuits energized by bench power supplies and function generators.
 - v. Measure voltages using standard laboratory instruments, including multimeters and oscilloscope.
 - vi. Assemble and test basic input/output microcontroller circuits.
 - vii. Design and construct a microcontroller circuit.
 - viii. Work collaboratively in a team.
 - ix. Demonstrate an understanding of professional and ethical responsibility.

- b.** This course supports the following ABET Student Outcomes:
 - i. SO-4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
 - ii. SO-7: 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.** Standard laboratory equipment
- b.** Professional and ethical responsibility and IEEE Code of Ethics
- c.** Series and parallel combinations of resistors
- d.** Circuit laws and voltage dividers
- e.** Capacitors and RC constant
- f.** Rectifying diodes
- g.** Transistors as switches
- h.** Operational-amplifiers
- i.** 555-timer IC
- j.** Arduino microcontroller basics
- k.** Projec