

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: EGR 255

Credits: 1

Course Title: Electric Circuits Laboratory

Course Description: Teaches principles and operation of laboratory instruments such as VOM, electronic voltmeters, digital multimeters, oscilloscopes, counters, wave generators and power supplies. Presents application to circuit measurements, including transient and steady-state response of simple networks with laboratory applications of laws and theories of circuits plus measurement of AC quantities. Introduces computer-based circuit analysis software. Includes applications of graphing calculators and electronic spreadsheet software to circuit analysis. Co-requisite: EGR 251. Laboratory 3 hours per week.

General Course Purpose: This is the companion laboratory course for EGR 251.

Course Prerequisites and Co-requisites:

Co-requisite: EGR 251

Student Learning Outcomes:

Upon completing the course, the student will be able to

- a. Demonstrate a basic familiarity with laboratory instruments;
- b. Build, debug, and operate basic electric circuits;
- c. Demonstrate a basic understanding of DC circuit analysis;
- d. Demonstrate an understanding of basic operational amplifier circuits;
- e. Demonstrate a basic understanding of DC transient and AC steady state response;
- f. Demonstrate a basic understanding of circuit quantities;
- g. Complete formal lab reports;
- h. Work effectively in a team-based learning environment; and
- i. Design LED-based circuits to present information, such as an electronic voltmeter.

Major Topics to Be Included:

- a. Principles and operation of laboratory instrumentation
- b. Applications of circuit analysis to laboratory-based circuits
- c. Measurement of transient and steady state response
- d. Computer-based circuit analysis software
- e. Application of graphing calculators to circuit analysis
- f. Construction and operation of basic operational amplifier circuits
- g. Design of operational amplifier circuits

Date Created/Updated (Month, Day, Year): January 25, 2019