

The University of Texas at Tyler
Department of Electrical Engineering

EENG 3104 Linear Circuits Analysis I Laboratory (Required)

Syllabus

Catalog Description:

Introduction to principles and operation of basic laboratory equipment; engineering report preparation; design and implementation of experiments based on DC and AC circuit theory, network theorems, time and frequency domain circuit analysis. One three-hour laboratory per week.

Co-requisite or prerequisite: EENG 3304

Credits: (0 hours lecture, 3 hours laboratory per week)

Text(s): None

Additional Material: Engineering paper and scientific calculator

Course Coordinator: Hector A. Ochoa

Topics Covered:

Electric concepts; Ohm's law; Kirchhoff's voltage and current laws; node and loop analysis; simple operational amplifier circuits; capacitance and inductance; sinusoidal response of RC , RL , and RLC networks.

Evaluation Methods:

1. Examinations / Quizzes
2. Homework
- 3. Report**
4. Computer Programming
5. Project
6. Presentation
7. Course Participation
8. Peer Review

Course Objectives: By the end of this course students will be able to:

1. Use electronic laboratory test equipment: digital multimeter, signal generator, and oscilloscope;
2. Explain the concepts of Thévenin-equivalent circuits and linear superposition and apply them to laboratory measurements;
3. Predict the behavior and make measurements of simple operational-amplifier circuits;
4. Predict and measure the sinusoidal steady-state responses of simple RC and RLC circuits;
5. Communicate laboratory results through effective written reports.

Relationship to Program Outcomes²: This course supports the following Electrical Engineering Program Outcomes, which state that our students will have:

1. have the ability to apply knowledge of the fundamentals of mathematics, science, and engineering (1-4) **[2]**;
2. have the ability to use modern engineering tools and techniques in the practice of electrical engineering (1,3,4) **[3]**;
3. have the ability to analyze electrical circuits, devices, and systems (1-4) **[2]**;
4. have the ability to design electrical circuits, devices, and systems to meet application requirements;
5. have the ability to design and conduct experiments, and analyze and interpret experimental results;
6. have the ability to identify, formulate, and solve problems in the practice of electrical engineering using appropriate theoretical and experimental methods;
7. have effective written, visual, and oral communication skills (5) **[3]**;
8. possess an educational background to understand the global context in which engineering is practiced, including:
 - a. knowledge of contemporary issues related to science and engineering;
 - b. the impact of engineering on society;
 - c. the role of ethics in the practice of engineering;
9. have the ability to contribute effectively as members of multi-disciplinary engineering teams;
10. have a recognition of the need for and ability to pursue continued learning throughout their professional careers.

²Numbers in parentheses refer to course objective(s) that address the Program Outcome. **Bold numbers in square brackets indicate how much of a focus is placed by this course on each Program Outcome.**

The scale is:

1 = minor focus; **2** = significant focus; **3** = major focus.

Program Outcomes not listed are assumed not to be a focus of this course.

Contribution to Meeting Professional Component: (in semester hours)

Mathematics and Basic Sciences:	0	hours
Engineering Sciences and Design:	1	hours
General Education Component:	0	hours

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Modified By: Hector A. Ochoa

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