The University of Texas at Tyler
Department of Electrical Engineering

Course: EENG3304 – Linear Circuit Analysis I (Required)

Syllabus

Catalog Description:

Basic circuit elements (resistance; inductance, mutual inductance, capacitance, independent and controlled voltage and current sources). Topology of electrical networks; Kirchhoff 's laws; node and mesh analysis; dc analysis; introduction to operational amplifiers; complex numbers; sinusoidal steady-state ac circuit analysis; first and second-order circuits; transient analysis of first-order circuits.

Prerequisites: Prerequisites EENG 1301, Co-requisites: Math 3305, PHYS 2326 PHYS2126,

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

Text(s): Fundamentals of Electric Circuits with Connect Plus, Charles Alexander, 7th Edition, McGraw Hill. ISBN: 978-1-260-22640-9

Additional Material: None

Course Coordinator: Premananda Indic, PhD

Topics Covered: (paragraph of topics separated by semicolons)

In this course the student will cover DC and AC circuit analysis techniques; Kirchoff's Laws; Thevenin and Norton transformations; transformers; DELTA to Y transformations; operational amplifiers; 1st order circuits and brief introduction to 2nd order circuits.

Evaluation Methods: (only items in dark print apply):

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

Course Learning Outcomes[1]: By the end of this course students will be able to:

1. Explain the concept of electric potential, current, and power. [1]
2. Identify concepts of electric network topology: nodes, branches, and loops. [1]
3. Describe the relationship of ideal voltage and current in resistors, capacitors and inductors. [1]
4. Describe the relationship of ideal voltage and current in mutual inductance. [1]
5. Apply Kirchhoff's Voltage Law (KVL) to analyze electric circuits. [6]
6. Apply Kirchhoff's Current Law (KCL) to analyze electric circuits. [6]
7. Explain the concept of Thevenin equivalent. [1]
8. Explain the concept of Norton equivalent. [1]

9. Apply Thevenin equivalent to circuits. [1]
10. Apply Norton equivalent to circuits. [1]
11. Analyze simple operational-amplifier circuits using an ideal op amp model. [1]
12. Describe simple transformer circuits. [1]
13. Perform transient analysis of first-order circuits. [1]
14. Apply the phasor transform to sinusoidal steady state analysis of electric circuits. [1]
15. Characterize the response of second order circuits. [1]
16. Understand the importance of electric circuits in the real world. [4]

[1]Numbers in brackets refer to method(s) used to evaluate the course objective.

Relationship to Program Outcomes (only items in dark print apply)[2]: This course supports the following Electrical Engineering Program Outcomes, which state that our students will:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics; [1,2,3,4,7,8,9,10,11,12,13,14,15]
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. an ability to communicate effectively with a range of audiences;
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; [16]
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions; [5,6]
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

[2]Numbers in brackets refer to course objective(s) that address the Program Outcome.

Contribution to Meeting Professional Component: (in semester hours)

Mathematics and Basic Sciences:		hours
Engineering Sciences and Design:	3	hours
General Education Component:		hours

Prepared By:	Premananda Indic	Date:	May 27, 2020
Modified By:			
Modified By			