The University of Texas at Tyler
Department of Electrical Engineering

Course: EENG 3305 – Linear Circuit Analysis II (Required)

Syllabus

Catalog Description:

Laplace transform; Transient Circuit Analysis; circuit analysis and design using the Laplace transform; convolution in time domain and frequency domain; transfer functions; frequency response and Bode plots; passive and active filter design (frequency selective circuits); Fourier series; Fourier Transform; two-port circuits; balanced three-phase AC circuits. Three hours of lecture per week.

Prerequisites: EENG 3304, EENG 3104 and MATH 3305, MATH 3404

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

Text(s): Charles K. Alexander and Mathew N.O. Sadiku, Fundamentals of Electric Circuits, Fifth Edition, McGraw Hill, 2012, ISBN 978-0-07-338057-5

Additional Material: Handouts

Course Coordinator: Premananda Indic

Topics Covered: (paragraph of topics separated by semicolons)

Laplace Transform; Circuit Analysis and Design using the Laplace Transform; Convolution in Time Domain; Transfer Functions; Frequency Response and Bode Plots; Passive and Active Filter Design (frequency selective circuits); Fourier Series; Fourier Transform; Balanced Three-phase AC Circuits; Two-port networks

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

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

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

1. Obtain and apply Laplace transform to circuit analysis (1,2)
2. Analyze and design passive and active filters (1,2,4)
3. Determine transfer functions for linear, lumped-parameter circuits (1,2)
4. Perform convolution in time and frequency domain on linear time-invariant systems (1,2)
5. Determine the impulse response and step response in linear circuits (1,2)
6. Sketch Bode plots for single pole systems by hand (1,2)
7. Apply the Fourier series to compute the response of a linear network to periodic, non-sinusoidal signals (1,2,4)
8. Analyze two-ports networks (1,2,4)

[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. have the ability to apply knowledge of the fundamentals of mathematics, science, and engineering; [1,3,4,5,8]
2. have the ability to use modern engineering tools and techniques in the practice of electrical engineering; [2,3,7]
3. have the ability to analyze electrical circuits, devices, and systems; [1,2,8]
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; [2,3,6,7,8]
7. have effective written, visual, and oral communication skills;
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.

[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:	0.25	hours
Engineering Sciences and Design:	2.75	hours
General Education Component:		hours

Prepared By:	Hassan El-Kishky	Date:	August 23, 2007
Updated By:	Premananda Indic	Date:	August 1, 2018