The University of Texas at Tyler
Department of Electrical Engineering

EENG 3301: Electrical Engineering Circuits, Systems, and Applications
(Required for Mechanical Engineering Majors)

Syllabus

Catalog Description:

EENG 3301: Electrical Engineering Circuits, Systems, and Applications
The fundamentals of electrical and electronic components and circuits, circuit analysis, electric motors and generators, fundamentals of electric power systems. Three hours of lecture per week. (Not for electrical engineering majors)

Prerequisites: PHYS 2326: University Physics II

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

Text(s): Allan R. Hambley, Electrical Engineering Principles and Applications, 7th Edition, Pearson, 2016. ISBN-10: 0-13-448414-2 ISBN-13: 978-0-13-448414-3

Additional Material: None

Course Coordinator: Dr. Yasser Mahgoub

Topics Covered: (paragraph of topics separated by semicolons)

Fundamentals of Electric Circuits; Network Analysis; Inductance and Capacitance; Transients; Steady-State Sinusoidal Analysis; Operational Amplifiers; DC Machines; AC Machines; Fundamentals of Electric Power Systems.

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

1. Define fundamental properties of electric circuits including voltage, current, power, and energy [1].
2. Analyze DC resistive circuits using different techniques [1,2].
3. Understand basic energy-storage elements (inductors and capacitors) [1].
4. Solve simple first order transient circuits [1].
5. Apply simple steady state sinusoidal analysis to AC circuits [1,2].
6. Analyze three-phase circuits of moderate complexity [1].
7. Attain basic understanding of operational amplifier [1].
8. Analyze basic circuits of ideal operational amplifiers [1,2].
9. Attain basic understanding of electric machines and their applications [1,2].
10. Attain basic understanding of electric power systems [1].

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

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

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics [1-5, 7].
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 [6, 8, 9].
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 [10].
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.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

[2]*Numbers in brackets refer to course learning outcome(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

Grade Replacement:

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grape point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)

Prepared By:	Dr. Yasser Mahgoub	Date:	21 April 2020
Edited By:	Dr. Yasser Mahgoub		11 May 2020
	Dr. Yasser Mahgoub		7 January 2021