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

The University of Texas at Tyler
Department of Electrical Engineering

EENG 3301
Electrical Engineering Circuits, Systems, and Applications

Course Outline

Course Coordinator

Dr. Yasser Mahgoub
Office: HEC-A205
ymahgoub@uttyler.edu

Time: 12:30 pm - 1:55 pm, MW
Place: HEC A217
Text: Allan R. Hambley, *Electrical Engineering: Principles & Applications*, 7th Ed. Pearson, 2018. ISBN-13 978-0134484143. Also usable is the 6th Edition, published 2014 (ISBN-13 978-0133116649)

Schedule:

Week	Start Date	Topic	6th Ed	7th Ed
1	January 10	Fundamentals of Electric Circuits	1	1
2	January 17	Network Analysis	2	2
3	January 24	Network Analysis / **Quiz 1**	2	2
4	January 31	Inductance and Capacitance	3	3
5	February 7	Transients	4	4
6	February 14	Steady-State Sinusoidal Analysis	5	5
7	February 21	Steady-State Sinusoidal Analysis	5	5
8	February 28	**Midterm Exam**		
9	March 14	Operational Amplifiers	14	13
10	March 21	DC Machines	16	15
11	March 28	AC Machines	17	16
12	April 4	**Quiz 2**		
13	April 11	Fundamentals of Electric Power Systems		
14	April 18	Review		
15	April 25	**Final Exam (TBD)**		

Assessment:

Quizzes	20%
Mid-Term Exam	30%
Homework	10%
Final Exam	40%

Grading Scale:

Grades will be assigned based on the total score as per the distribution below:

A:	90% – 100%
B:	80% – 89%
C:	70% – 79%
D:	60% – 69%
F:	< 60%

Any deviation from the above policy such as scaling or curving to calculate the individual item or final scores will be at the sole discretion of the instructor and performed by the instructor uniformly for all students in the class section.

Attendance and Make-up Policy:

The progressive nature of the class means that perfect attendance is recommended if a good grade is desired. Makeup quizzes, exams or projects will only be provided for valid absences and at the sole discretion of the instructor.

Course communication:

Course communication will take place by e-mail and by announcements on UT-Tyler's Learning Management System (LMS). University policy requires that official e-mail communication be sent only to Patriot e-mail accounts.

Academic misconduct:

Academic misconduct that comes to light will be dealt through the formal discipline process. Examples of academic misconduct include (but are not limited to) submitting the work of others as one's own, copying from others during quizzes, and doing work intended to be submitted by another person.

General Policies of the University of Texas at Tyler

Grade Replacement/Forgiveness and Census Date Policies: Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy: Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability Services: In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact the Disability Services office in UC 3150, or call (903) 566-7079.