

The University of Texas at Tyler
Department of Electrical Engineering

EENG 3106: Electronic Circuit Analysis I Lab (required)

Syllabus

Catalog Description:

Circuit applications of operational amplifiers; circuit effects of non-ideal characteristics of operational amplifiers; diode characteristics; diode circuits and applications; transistor biasing (bipolar junction transistors and field effect transistors); low frequency transistor amplifier design.

Prerequisites: EENG 3306 (Co-requisite)

Credits: (0 hours lecture, 1 hours laboratory per week)

Text(s): None

Additional Material: Laboratory Procedures (provided on-line)

Course Coordinator: Yasser Mahgoub

Topics Covered: (paragraph of topics separated by semicolons)

Generalized amplifier models and two-port networks; operational amplifier circuits (including non-ideal characteristics); semiconductor diode characteristics; diode rectifier and waveshaping circuits; MOSFET device characteristics; bipolar junction transistor characteristics; the common-emitter amplifier.

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

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

Course Learning Outcomes¹: By the end of this course students will be able to:

1. Calculate and measure the effects on circuit performance of non-ideal electrical characteristics of operational amplifiers.
2. Measure and analyze semiconductor diode V-I characteristics.
3. Design simple rectifier and waveshaping circuits.
4. Measure and analyze the V-I characteristics of enhancement-mode MOS devices.
5. Measure and analyze the V-I characteristics of bipolar junction transistors.
6. Measure the voltage gain, input impedance, and output impedance of a single-stage common-emitter amplifier and compare these to theoretical values.
7. Use modern engineering tools including modeling and simulation software and virtual instruments.
8. Utilize engineering literature such as technical manuals and product datasheets to select components to meet experimental or prototype requirements
9. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.

¹Numbers 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 [1,6].
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].
3. An ability to communicate effectively with a range of audiences. [9]
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.
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 [2,4,5,7].
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. [8].

²Numbers 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:	1	hours
General Education Component:		hours

Prepared By:
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Date:

8 August 2016
20 August 2018
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The University of Texas at Tyler
Department of Electrical Engineering

EENG 3106 – Electronic Circuit Analysis I Laboratory
2022 Fall Semester

COURSE
OUTLINE

Course Coordinator:

Dr. Yasser Mahgoub Office: HEC A205 Email: ymahgoub@uttyler.edu Office Hours: TBA
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Prerequisite or co-requisite: EENG 3306 (Electronic Circuit Analysis I)

Meeting time: Monday 2:00–4:45 PM

Place: HEC B214

Teaching Assistant: TBA

Grading Policy:

Lab Assignments (6)	60%
Final Exam	30%
Attendance	10%
Total	100%

Semester Schedule:

Date	Laboratory activities	Assignment Due
Aug. 22	Lab 0: Introduction to Multisim	
Aug. 29	Lab 0: Introduction to Multisim	
Sept. 5	Labor Day, no class	
Sept. 12	Lab 1: Operational amplifier circuits	
Sept. 19	Lab 1: Operational amplifier circuits	Lab 1 report due on Sep. 26
Sept. 26	Lab 2: Diode IV characteristics	
Oct. 3	Lab 2: Diode IV characteristics	Lab 2 report due on Oct. 1
Oct. 10	Lab 3: Diode rectifier and wave-shaping circuits	
Oct. 17	Lab 3: Diode rectifier and wave-shaping circuits	Lab 3 report due on Oct. 24
Oct. 24	Lab 4: MOSFET IV characteristics	
Oct. 31	Lab 4: MOSFET IV characteristics	Lab 4 report due on Nov. 7
Nov. 7	Lab 5: BJT IV characteristics	Lab 5 report due on Nov. 14
Nov. 14	Lab 6: Common-emitter amplifier	Lab 6 report due on Nov. 21
Nov 21	Thanksgiving Break, no class	
Nov 28	Final Exam	

Important course management information:

1. All assignments are to be submitted through Canvas. No hard copies will be accepted.
2. Students can form group of 2. The roster will be posted by the Instructor.
3. Simulation results for a given experiment are due by 11:59 PM on the submission day.
4. Each lab report carries 100 points credit. A 10% penalty will be deducted per day for late reports.

Grading scale: 90-100– A; 80-89–B; 70-79–C; 60-69 – D; <60 – F. Final scores will be rounded to the nearest integer.

Patriot e-mail: All students at UT-Tyler have been given Patriot e-mail accounts with addresses of the form:

<user name>@patriots.uttyler.edu

Any e-mail messages sent either individually or to the class as a whole will be sent to Patriot e-mail accounts.

Course and instructor evaluations: Student evaluations of both the course and the instructor at the end of the course are a valuable means of assessment; filling them out is strongly encouraged. Departmental evaluation forms will be presented at the last regularly-scheduled class meeting.

Academic misconduct: Academic misconduct will not be tolerated. Examples of academic misconduct include (but are not limited to) submitting the work of others as one's own (plagiarism) and doing work intended to be submitted by another person. Copying materials from on-line sources for your laboratory reports without attribution is plagiarism!

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

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.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement:

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation:

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.