Summer 2021 EE/CE 3202

Course Information

Course Number: EE/CE 3202. Sections 3U1, 3U2

Course Title: Electrical and Computer Engineering Fundamentals-II Laboratory

Term: Summer 2021

Professor Contact Information

Prof. *Kamran Kiasaleh* (www.utdallas.edu/~kamran). Office: ECSN3.902, (972)883-2990 (phone), (972)883-2710(fax). Email: kamran@utdallas.edu. Office hours: 12:00-1:00 pm Fridays. *Lectures will be presented live on eLearning (blackboard) on Fridays (as scheduled).*

Microsoft Teams meeting for office hours
Join on your computer or mobile app
Click here to join the meeting
Or call in (audio only)
+1 737-220-2208,,868027777# United States, Austin
Phone Conference ID: 868 027 777#
Find a local number | Reset PIN
Learn More | Meeting options

For confidential issues, such as grades, specific questions about graded material, etc., please email Prof. Kiasaleh for a private session.

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Teams Links for Weekly Lab Meetings (10:00 am- 2:30 pm Tuesday of the Week)

Microsoft Teams meeting 1

Join on your computer or mobile app
Click here to join the meeting
Or call in (audio only)
+1 737-220-2208,,484434615# United States, Austin
Phone Conference ID: 484 434 615#
Find a local number | Reset PIN
Learn More | Meeting options

Microsoft Teams meeting-2

Join on your computer or mobile app
Click here to join the meeting
Or call in (audio only)
+1 737-220-2208,,505014109# United States, Austin
Phone Conference ID: 505 014 109#
Find a local number | Reset PIN
Learn More | Meeting options

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Course Modality and Expectations

Instructional Mode	The mode of instruction will be Virtual/Remote for this class. Please see the link below for more information about this modality of instruction. Summer 2021 Registration Information | The University of Texas at Dallas (utdallas.edu)
Course Platform	For access to notes, live and taped lectures, submission of assignments (including pre-labs and lab reports), grading, etc. please use eLearning for this course. Teams is also used during the scheduled lab periods and office hours.
Expectations	Students are expected to attend all lectures (live or asynchronously), conducts experiments individually (help from TA is acceptable. Collaboration with other students or any other individual is prohibited), demonstrate the ability to design, implement, and test circuits shown in this lab, and conduct professionally in all interactions with the TA and the instructor for the lab. Any violations of the university rules and regulations will be referred to the university committee on student conduct. Please see Student Code of Conduct for more information.
Asynchronous Learning Guidelines	The weekly lectures for the lab will be delivered on eLearning live every Friday. The lecture will be taped and students can view the lecture after the lecture has been given live. The experiments are conducted at home in an asynchronous manner (a due date for each experiment will be enforced for all modalities). See link below for details regarding asynchronous access. https://utdallas.edu/covid/response/faq/#asynchronous

COVID-19 Guidelines and Resources

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record.

Please see http://go.utdallas.edu/syllabus-policies.

Classroom Conduct Requirements Related to COVID-19

Although this lab course is conducted in remote/virtual mode, please make a note of instructions (given below) regarding the conduct in the lab if the need to come in to UTD arises during the Fall semester.

UT Dallas requires that all students must wear a face covering that covers the nose and mouth in all university buildings and classrooms. To help protect the health and safety of students, instructors, and the University community, students who choose not to wear a face covering may not attend class in person but may attend a course remotely. Anyone attending class in

person without a face covering will be asked to put one on or leave. Instructors may end the class if anyone present refuses to appropriately wear a face covering for the duration of class. Students should also be sure they are at least six feet away from their fellow students and faculty, and seated in a seat that is designated to ensure that distance. Students who either refuse to wear face coverings appropriately or to adhere to other social distancing protocols may face disciplinary action for Student Code of Conduct violations. Students who are unable to comply with the university policies including wearing a face covering should consult the Comets United webpage for further instructions.

Students who have tested positive for COVID-19 or may have been exposed should not attend class in person and should instead follow required disclosure notifications as posted on the university's website (see "What should I do if I become sick?" webpage)

Class Attendance

Regular and punctual class attendance is expected regardless of modality. Students who fail to attend class regularly are inviting scholastic difficulties. It is recommended that students attend the Friday lectures live on eLearning, although a tape of the lecture will become available immediately after the live broadcast. It is important that students demonstrate the functionalities of their designed circuits to the TA or the instructor. This can be accomplished during the scheduled lab sessions via 2 simultaneous Teams meetings (we need to have multiple concurrent meetings to accommodate the large number of students we have).

In-person participation records may be used to assist the University or local public health authorities in performing COVID-19 occurrence monitoring. Please note – in-person attendance requires consistently adhering to University requirements, including wearing a face covering and other public safety requirements related to COVID-19, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class.

If you need to be in an asynchronous mode, you need to inform the instructor during the first week of classes. Please provide a reasonable justification for this decision (scheduling convenience is not an acceptable excuse). Please see the link https://utdallas.edu/covid/response/faq/#asynchronous to decide whether you can choose this option.

You are expected to use two concurrent Teams links described above to communicate with your TAs and/or instructor to explain/demonstrate your designs. A 4.5-hour block of time is reserved for Tuesdays of the week from 10 AM to 2:30 PM. This is equivalent to 9 hours presentation time. You may join at any time in this window of time to do an oral demonstration of your circuit. **If you are unable to attend the lab session in this designated time frame, you need to contact your instructor to set up a separate date and time within the allotted week (namely, the week that is dedicated to the schedule experiment) to demonstrate your circuit (this option is only available to those who have signed up for asynchronous mode of instruction).** You are encouraged to come to the lab meeing on Teams by 10:00 AM and stay in the queue to make your presentations. If you choose to be late (show up at 1:00 PM for instance), you may not be able to make a presentation due to long length of the queue. *The responsibility of making sure that you are on time resides with you. In the event of not being able to make a presentation due to tardiness results in a grade of 0 for the presentation (no makeup sessions will be held).*

Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those who are not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor will record the weekly Friday lectures of this course. Recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. The recorded lectures will be available on eLearning without a caption and/or transcription. A version of the lecture with caption and/or transcription will be made available on Microsoft Stream (the link is available on eLearning) 24 hours after the scheduled lecture. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. **Unless the Office of Student**

AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class recordings in this course applies only to the lectures on eLearning that will not identify any of the student participants. The office hours and lab sessions which will be delivered on Teams will not be recorded by the instructor.

Class Materials

The lab manual for this class will be made available on eLearning. This includes pre-lab assignments and lab procedures. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisite CE 3201 or EE 3201. Co-requisite: ECS 3390. Prerequisite or Co-requisite: EE 3310 or CE 3310

Course Description

This is a laboratory course intended for introducing undergraduate students in electrical and computer engineering to basic electronic components and systems. The course builds upon student's knowledge of basic electronic principles to introduce electronic components and systems in a laboratory setting.

Student Learning Objectives/Outcomes

Students are expected to be able to demonstrate the following:

1. **Demonstrate the ability to test and measure characteristics of electronic circuits and systems.**
2. **Demonstrate the ability to present laboratory results orally**
3. **Demonstrate the ability to design electronic circuits for a specified application.**

Required Textbooks and Materials

1. Test Equipment (Active Learning Module [ADALM2000] and a Digital Multi-Meter [DMM]). The department will loan these to students; however, you may purchase them for yourselves too. (This is suggested because the ADALM2000 (or Digilent AD2) is nice to own for an ECE.) Note: Each student must return all department-owned equipment in good working order before receiving their final grade!
2. Electronic Components will be provided to students. Enjoy!
3. Access to a computer (laptop or desktop) with an open USB port, a camera and a microphone. (A cell phone camera may be used as well.)
4. Sufficient internet access to allow you to view as well as participate in online lectures and help sessions.
5. You need a working version of PSpice. For installing OrCAD PSpice use the link
6. OrCAD Academic Program | EMA Design Automation (ema-eda.com)
7. You must submit your student ID. It may take up to 7 days to receive the license files. If you need assistance with installation, email **support@ema-eda.com.**

   If you do not receive license files within 7 days of application, email **Kevin Rogers for assistance. Kevin.rogers@utdallas.edu.**

   PLEASE DO NOT DOWNLOAD FREE 30-DAY TRIAL. Download the academic version (student version). You may have to request an access key from Orcad, which will arrive in a few business days.

   If you already have Orcad/PSpice working for you from the previous semester, you may need to download it again. Do note that the copy you have downloaded is good for 6 months only.
8. A tutorial on using PSpice (and the other OrCAD products) can be found here: https://www.ema-eda.com/learning/orcad-walk-throughs

   a. I expect that you have some experience with PSpice from 3201. If not, or if you don't feel ready to use it, then it would be a good idea for you to build a few test circuits and apply various signals as well as test "probes" to make sure that you understand the program operation. You can do this before the start of the semester.

9. (It is a good idea to install Multisim as well as PSpice). Students must download the software for Multisim from the following link, choosing between LabVIEW or Multisim:
   Download your Academic Software:

https://www.ni.com/en-us/support/downloads/software-products/download.multisim.html#312060

Multisim Download - NI

www.ni.com

Access download and support information for Multisim Education and Professional

Your current Student License S/N is **M85X11732**

The S/N will be able to activate both, LabVIEW and Multisim. Activate Multisim.

If you have any doubts, you can use the link below

Activating National Instruments Software

https://knowledge.ni.com/KnowledgeArticleDetails?id=kA00Z000000P9BTSA0&l=en-US

for a more complete guide. The SIO (Student Install Option) can be distributed with the S/N. We usually recommend that to avoid the huge workload to accept all permissions or grant a disconnected license to each student from your Volume License Manager. Remember that every time you renew, you start fresh with a new SIO.
Multisim tutorial can be found here: http://www.ni.com/tutorial/10710/en/#toc1
Multisim is graphically-based and is relatively easy to learn as the blocks are intuitive. Do build some simple circuits and apply various signals/scopes to test the software before the start time of the lab.

Suggested Materials

1. You may purchase any components that you would like to test out. Try Mouser.com or Arrow or any other component distributor. I would suggest that you could try out things like:
   a. A few different LEDs (different colors so that you can learn about the different materials)
   b. A micro-controller which accepts digital and analog inputs (MSP432 from TI is a great one).
   c. Various sensors to test out (maybe see their frequency response and input impedance etc. etc.)
   d. Or components that you want to use to build something for fun or for your house / family.

Course Schedule: This is our schedule for the semester. I do not expect to deviate from it.

1. Pre-Lab reading is due at the start of the Preparatory Lecture
2. Pre-Lab HW assignment is due the following Monday at 11:59 PM.
3. Lab presentation must be done on the Tuesday of the week during the lab time.
4. Lab report is due by 11:59 pm on Saturday of the week following the lab presentation for the week.

Assignments & Academic Calendar

	Tuesday (lab)	**Friday (lecture)**
Week of May 24	**----------**	**Introduction/Review of safety guidelines/variable power supply**
Week of May 31	**Variable PS experiment**	**Transformers**
Week of June 7	**Transformer experiment**	**Bipolar Junction Transistors with DC Biasing**
Week of June 14	**BJT DC experiment**	**Bipolar Junction Transistors AC Analysis**
Week of June 21	**BJT AC experiment**	**Field-Effect Transistors with DC Biasing**
Week of June 28	**FET DC experiment**	**Field-Effect Transistors with AC analysis**
Week of July 5	**FET AC experiment**	**Operational Amplifiers (OPAMP)**
Week of July 12	**OPAMP experiment**	**Analog to Digital converter (ADC)**

Week of July 19	**ADC experiment**	**Digital to Analog (DAC) Lecture**
Week of July 26	**DAC experiment**	**PID controller**
Week of August 2	**PID experiment**	**No lecture**

Grading Policy

1. Pre-lab (lab HW assignments) 25%
2. Oral Presentation (observed by TA/instructor) 55%
3. Lab Report 20%

- 1-You are allowed to miss **at most 1 experiment**. Any failure to make presentations and complete the needed work for more than 1 experiment will result in a grade of F regardless of the performance in other labs. In case of excused absences that cannot be accommodated due to limited schedule, a grade of incomplete is assigned provided that the student is in good standing (has completed 70% of the required work satisfactorily). The incomplete work must then be completed in the Fall semester in an in-person mode.
- **An overall score of 50% or better is required to earn a passing grade (C- or better) in this course.**

Course & Instructor Policies

1. ***Students are expected to work independently. This includes all work done for completing pre-labs and lab experiments, which are done at home using AD2 pocket lab. Students must develop all simulation codes (in the form of PSpice/Multisim) independently. Students are also required to build and test all required circuits independently (help from TA is acceptable). Any student in violation of the above policy will be referred to UTD's disciplinary committee.***
2. ***Students are required to demonstrate that they have built the required circuits, as outlined in the lab manual, and that their circuits are functioning properly. This can be demonstrated in the weekly Teams meeting on Tuesday of the week or during another period in the week that students and the faculty can agree upon for students who have signed up for asynchronous mode. Regardless of the mode selected by the***

student, this step must be completed before the lecture time of the subsequent lab (see the Assignment and Academic calendar section above). For instance, students must demonstrate the viability of the circuits that the student has built for the OPAMP experiment before the lecture on Friday of that week on Analog to digital Converter.

3. ***Students are allowed to work on any experiment at home, but step 2 must be completed before proceeding to the next experiment.***
4. ***Equipment failure may not be used as an excuse for not completing the experimental phase at the designated time. Students are encouraged to build, test, and record the performance of their circuits before their presentation on Tuesday of the week. This can be done since students are provided with the necessary equipment to complete their experiments at home. Since experiments are scheduled for Tuesday of the week, any equipment failure can be rectified by contacting Kevin Rogers before scheduled lab. In case of equipment failure on the day of presentation, students can use the recording of their presentation during the lab time (only when there is an equipment failure). The recording must clearly show the circuit and its outputs along with the presenter simultaneously.***
5. ***Pre-labs are due 3 days (Monday by 11:59 pm) after a lecture on the subject is presented on eLearning. Pre-labs must be uploaded to the eLearning. Since lectures are scheduled for Friday of the week, the pre-lab for that experiment is due the following Monday by 11:59 pm. No student is allowed to work on a lab for which the student has not submitted the pre-lab. Late pre-labs for unexcused reasons will receive a 50% reduction in score. Since pre-labs are required, students need to submit late pre-labs before Tuesday of the week when Teams meeting will take place. A pre-lab for more than 1 week due to an unexcused absence will receive a grade of 0. However, the pre-lab is always needed for oral presentation.***
6. ***For students in the asynchronous mode, pre-labs are due before the commencement of the experiment. The pre-lab must be submitted during the week immediately following the lecture on Friday (asynchronous mode) of the week. For instance, for asynchronous students, the pre-lab for FET AC experiment is due before the lecture on OPAMP. Since such students, for example, need to complete the FET AC experiment in the week of July 5, the student must make sure that the pre-lab for that experiment is uploaded before experimenting. Students in asynchronous mode are warned about delaying the submission of pre-lab and completing lab demonstrations close to the deadline as some experiments are long and require non-negligible amount of time to complete.***
7. ***It is the student's responsibility to schedule (with the instructor's approval) a reasonable pre-lab due date and lab demonstration time to comply with the rules that are established above when the student is operating in an asynchronous mode. For each experiment, the time frame for the experiment commences with the Friday lecture on that experiment and ends with the lecture on the subsequent experiment.***
8. ***Lab reports must adhere to the guidelines for such submissions. This guideline is posted to eLearning. Lab report for a lab is due by 11:59 pm on Saturday following the completion of the experiment.***

9. ***Late work. Any work that is late by more than one week will receive a grade of 0. If the late submission is due to an excused absence, then the student is allowed to makeup the experiment in a timely manner during a schedule which is agreed upon by the instructor. For all excused absences, documentation must be provided. For instance, for medical and mental health issues, a note from a doctor or therapist is needed. For work-related travel or special assignments, a note from a person in the supervisory role is needed. Contact Prof. Kiasaleh for further information before you miss a lab week.***

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see https://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to https://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.