



EE/CE 3201: Fundamentals-I Laboratory, Fall 2024 **Electrical and Computer Engineering Department** **Erik Jonsson School of Engineering & Computer Science**

Dr. Tooraj Nikoubin

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Office Hours: W 12noon-01pm
by appointment

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Lecture:001 Fridays 1:00pm-2:15pm, GR 2.530

Lecture:002 Fridays 2:30pm-3:45pm, GR 2.530

Lab Time Sections 301,302,303:

ECSN 3.108, 3.110, 3.112, 3.114, 3.118, 3.120

Tuesday 10:00am – 12:45pm

Lab Time Sections 304,305,306:

ECSN 3.108, 3.110, 3.112, 3.114, 3.118, 3.120

Tuesday 01:00pm – 03:45pm

● **Course Description**

- Introduction to the fundamental building blocks of laboratory measurements and data analysis in Electrical and Computer Engineering.
- Prerequisites: (CE 1202 or EE 1202) and RHET 1302.
- Prerequisite or Corequisite: EE 3301 or CE 3301 and EE3320 or CE 3320.
(Same as CE 3201) (1-3) S

● **Student Learning Objectives/Outcomes**

Students are expected to be able to demonstrate the following:

- Demonstrate the ability to test and measure characteristics of electronic devices and circuits.
- Demonstrate the ability to interpret experimental data.
- Demonstrate ability to present laboratory results in written form.
- Demonstrate ability to simulate devices and circuits.

● ***Students are expected to work independently.***

Experiments are conducted by group of two students, but each student is required to work on his/her pre-lab, and subsequent lab analysis and report independently. In case of lab experiment may you can get permission to work individually. This item may will be changed depends on pandemic situation and university policies.

Any student in violation of the above policy will be referred to UTD's disciplinary committee.

● **Required Materials**

1. Laboratory manual (can be downloaded from eLearning)
2. Lab equipment videos (can be available from eLearning)
3. Test Equipment (Contains Active Learning Module [Analog Discovery 2] and Digital Multi-Meter [DMM]).

The department will loan these to students during lab time and office hours; however, you may purchase them for yourselves too. (This is suggested because the Digilent AD2 (or similar devices) is really nice to own for an ECE.)

4. Academic Edition of Cadence-OrCAD PSpice.

a. Student Download Link:

<https://www.ema-edu.com/products/cadence-orcad/orcad-academic-program>

b. To get a license and obtain installation assistance contact: techsupport@ema-edu.com

c. DO NOT DOWNLOAD the “free 30-Day Trial” version! You need to download the student version. This will require you to request a license access key from Cadence-Orcad but it will arrive in a few business days.

d. A tutorial on using PSpice (and the other OrCAD products) can be found here:

<https://www.ema-edu.com/learning/orcad-walk-throughs>

6. Please contact the ECE lab manager [Mr. Kevin Rogers at kar140230@utdallas.edu] for help in resolving any issues related to the download and installation of PSpice.

● Course Modality and Expectations

a. Instructional Mode

The mode of instruction will be Traditional Classroom/Laboratory (in-person) in this semester for this class. Please follow the course and university announcement for getting update in this regard.

b. Course Platform

Please use eLearning for access to the notes, submission of assignments (including pre-labs, lab reports, and quizzes), grading, etc. in this course.

c. Expectations

Students are expected to attend all lectures and conduct experiments in-person at UTD. Students are expected to 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](#).

d. Asynchronous Learning Guidelines

There is no asynchronous mode of learning for this lecture/lab

● Grading Policy (tentative):

1. Pre-lab Report	25%
2. lab Performance and Oral Presentation	25%
3. Quizzes and Class Activities	25%
4. Lab Report	25%

An overall score of 65% or better is required to earn a passing grade (C- or better) in this course.

The above grading policy only applies to those who have attended all labs and have completed all experiments.

If any of the experiments is not completed, a score of 0 (and subsequently a grade of F) will be assigned for the course regardless of the other grades.

● Lab Schedule

Title		Lecture Friday	Experiment Tuesday
			08/20/24
		08/23/24	08/27/24
	Introduction and Lab Safety	08/30/24	09/03/24
Lab 1	Microcontroller & Digital Logic	09/06/24	09/10/24
Lab 2	Microcontroller & Sensors	09/13/24	09/17/24
Lab 3	Introduction to MSP432	09/20/24	09/24/24
Lab 4	Introduction to AD2	09/27/24	10/01/24
Lab 5	PSpice, simulation of circuits	10/04/24	10/08/24
Lab 6	DC motors	10/11/24	10/15/24
Lab 7	PCB design, testing and troubleshooting	10/18/24	10/22/24
Lab 8	Diodes	10/25/24	10/29/24
Lab 9	LED, and Solar Cells	11/01/24	11/05/24
Lab 10	RLC Circuits, Study State Analysis	11/08/24	11/12/24
Lab 11	RLC Circuits, Transient Analysis	11/15/24	11/19/24
Lab 12	Noise analysis	11/22/24	11/26/24
Thanksgiving holidays		11/29/24	12/03/24

Note: Red color dates are inactive dates

● Course Schedule:

- Pre-Lab report is due at 8am every Tuesday the day of lab experiment
- Lab Performance and Oral Report is due by the end of your assigned lab period.
 - For morning section (starts at 10am) is due at 12:45 PM (Occurs during the lab.)
 - For afternoon section (starts at 1pm) is due at 3:45 PM (Occurs during the lab.)
- Lab Written Report is due before the following Tuesday at 8:00 am (Green Deadline 100%)
- Lab Written Report is due before the following Tuesday at 8:00 am (Red Deadline for 80% points)
- A 5-minute time for conducting the Lab Performance and Oral Report will be assigned to each student. It will take place during the lab period.
(Video recorded which contains your lab experiments your lab work in details and your explanation will be acceptable for presenting your lab and you should upload it on eLearning)

● Academic Calendar

- First Class Day: Monday, Aug 19, 2024
- Last Class Day: Thursday, Dec 5, 2024
- Fall Break: Nov 25th to Dec 1st

● Course & Instructor Policies

1. Each lab contains a pre-lab, Lab procedure and lab report which must be completed by students individually. You will receive help as needed from our TA during lab time and office hours. Also, we have Tutors which can help you during office hours.
2. Please note that the Pre-Lab HW assignment is due on every Tuesday at 8am, (the day of lab experiments). You should upload your assignment in eLearning. You will not be allowed to do your Lab Performance and Oral Report until after you have uploaded your Pre-Lab HW Assignment.

3. There are no late pre-labs, unless student can provide excused reason(s) for missing the deadline for the pre-lab,
 - 3.a such as illness (a note from a physician is needed),
 - 3.b work-related (a note from the supervisor is needed),
 - 3.c holy days, etc.
4. Even though a grade of 0 is assigned to unexcused late pre-lab submissions, the completion of pre-lab is REQUIRED before initiating or continuing an experiment.
5. In the event of excused absence, students are required to complete the pre-lab before initiating the experiment in the next scheduled lab session.
6. You may start to work on your experiment at any time you wish, but you must finish your Lab Performance and Oral Report by the deadline.
7. Upon completion of an experiment, students will turn in their individual raw data along with their observations/conclusions to their TAs during lab experiments or after that before starting to work on lab report. The reports can be uploaded to eLearning for the course by close of business day of the due date. This submission is not a formal lab report, but rather an account of the observations made in the lab along with the answers to questions raised in the lab manual. Students must obtain their respective TA's signature on the data sheet they have collected in the experiment or have oral presentation to TAs in this regard during lab experiments.
8. Make up for an experiment will be granted for excused absences outlined above. In such a case, the experiment must be completed as soon as possible so that it will not interfere with the normal lab schedule. Furthermore, any student who has missed the lab week due to an excused absence is required to complete the experiment individually.
9. Any unexcused absence results in a grade of 0 for the lab and pre-lab.
10. Although there are set times for the labs and students are required to attend their designated lab times, with the approval of the instructor and availability of TA during office hours, students can attend other lab sessions to work on their experiments.
11. If a student cannot complete the experiment due to equipment malfunction or other unforeseen situation, student is allowed to attend another lab session or TA office hours for that week. If there is any problem with professor permission students can complete their work in the following week, However, EVERY effort must be made to complete the experiment during its designated week.
12. You must have written permission from Professor to report at an alternate time and you must have that permission at least 1 hour in advance of the regularly scheduled report time.

● **Class Participation**

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty.

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 Attendance**

Regular and punctual class attendance is essential. Students who fail to attend class regularly are inviting scholastic difficulties. It is required that students attend Friday lectures in-person. In Lab time, it is important that students demonstrate the functionalities of their designed circuits to the TA or the instructor.

- **Safety Guidelines and Resources**

The information contained in the following link lists the University's Policies and Procedures. We strictly adhere to these policies in this course.

UT Dallas Syllabus Policies and Procedures - The University of Texas at Dallas

Visit Comets United webpage to obtain the latest information on the University's guidance and resources for campus health and safety.

- **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](#).

- **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.”

- **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 <http://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 and university policies.