

## **EE / CE 3202.002 - Course Syllabus**

(Please read this syllabus in its entirety. There is important information throughout).

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### **Course Information**

|                              |  |
|------------------------------|--|
| <i>Course Number/Section</i> | EE / CE 3202 .002  |
| <i>Course Title</i>          | ECE Fundamentals – II Laboratory   |
| <i>Term</i>                  | Spring 2026  |
| <i>Days &amp; Times</i>      | Lectures: <b>Fridays</b> 8:30 AM – 9:45 AM<br>CR 1.202   |
| <i>Place</i>                 | Labs: <b>Wednesdays</b> 1:00 PM – 3:45 PM<br>Section 304: ECSN 3.108 & 3.110<br>Section 305: ECSN 3.112 & 3.114, |
| <i>Other</i>                 | TAs: TBD<br>OPEN Labs times for working on your lab circuits <u>might</u> be found: TBD                          |

### **Professor Contact Information**

|                          |  |
|--------------------------|--|
| <i>Professor</i>         | Shaheen Ahmed  |
| <i>Email Address</i>     | <a href="mailto:shaheen.ahmed@utdallas.edu">shaheen.ahmed@utdallas.edu</a> |
| <i>Office Location</i>   | ECSN 4.914   |
| <i>Office Hours</i>      | <b>Thursdays</b> 4:00 – 5:00 PM or by appointment.                         |
| <i>Other Information</i> | TAs TBD  |

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

Prerequisite: CE/EE 3201 – You'll learn about the lab tools and how to test devices.

Corequisite: ECS 3390 – You will learn about how to communicate a decent report.

Prerequisite or Corequisite: EE / CE 3310 – You will learn about electronic devices (diodes and transistors).

### **Course Catalog Description**

(2 semester hours) Introduction to more advanced building blocks of laboratory measurements and data analysis in Electrical and Computer Engineering.

### **Student Learning Objectives/Outcomes**

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**

#### *Required Text*

1. The laboratory manual will be made available in eLearning.

#### *Required Materials*

1. Test Equipment (Analog Discovery 2 [AD2] and a Digital Multi-Meter [DMM]). These are available in the labs; however, you may purchase them for yourselves for home studying of the basic concept. If you are interested in purchasing the components, contact Mr. Kevin Rogers ([kar140230@utdallas.edu](mailto:kar140230@utdallas.edu)). He may be able to get you a great price on your own set of equipment and also give you the complete list of components and test equipment that you need.
2. Electronic Components will be provided for in lab use.
3. Access to a computer (laptop or desktop) with an open USB port.
4. Sufficient internet access to allow you to view as well as participate in online (eLearning Collaborate) Lectures (if needed in case of quarantine).

5. Academic Edition of Cadence-OrCAD PSpice.
  - a. Student Download Link:  
<https://www.ema-eda.com/products/cadence-orcad/orcad-academic-program>
  - b. To get a license and obtain installation assistance contact: [techsupport@ema-eda.com](mailto:techsupport@ema-eda.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-eda.com/learning/orcad-walk-throughs>
  - e. My expectation is that you used PSpice in 3201. If not, or if you don’t feel ready to use it, then work through this tutorial before the start of the semester.
  - f. **If you choose NOT to install PSpice, you must have access to ECE computer lab to use PSpice for pre-lab assignments. The computer lab has a restricted access time, which can impact the ability to complete the pre-labs. It is your responsibility to make sure that you have access to PSpice.**
6. Academic Edition of National Instruments Multisim.
  - a. Download Link: (Students should select EDUCATION version)  
<https://www.ni.com/en-us/support/downloads/software-products/download.academic-volume-license.html#461438>
  - b. Your current Student License S/N is: H12X01640 (Student 2022-23)
  - c. A tutorial on installing Multisim can be found here:  
<https://knowledge.ni.com/KnowledgeArticleDetails?id=kA00Z000000P9BTSA0&l=en-US>
  - d. A tutorial on using Multisim can be found here:: <http://www.ni.com/tutorial/10710/en/#toc1>
  - e. If you prefer Multisim, then make sure you are ready to use it this semester. If you don’t feel ready to use it, then work through this tutorial before the start of the semester.
7. Diligent WaveForms: To operate the Analog Discovery 2 in the lab.
  - a. Download Link: <https://diligent.com/shop/software/diligent-waveforms/>
  - b. A tutorial on WaveForms comes with the download and another is here:  
<https://diligent.com/reference/software/waveforms/waveforms-3/start>
8. Please contact the ECE lab manager [Mr. Kevin Rogers at [kar140230@utdallas.edu](mailto:kar140230@utdallas.edu)] for help in resolving any issues related to the download and installation of PSpice and Multisim.

## Suggested Course Materials

### *Suggested Readings/Texts*

1. A tutorial on using PSpice (and other OrCAD products) can be found here:  
<https://www.ema-eda.com/learning/orcad-walk-throughs> My expectation is that you used PSpice in EE/CE 3201. If not, or if you don’t feel ready to use it, then work through this tutorial.
2. A tutorial on using Multisim can be found here: <http://www.ni.com/tutorial/10710/en/#toc1>
3. The WaveForms tutorial: <https://diligent.com/reference/software/waveforms/waveforms-3/start>

### *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.

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

1. Pre-Lab is due at the start of the lab period. (Wednesdays)
2. Lab Report is due the Monday following the lab completion (by 11:59 PM).
3. Lab Performance and Oral Test is due by the end of the next lab period (at assigned time).

Therefore:

For students in the **Wednesday (W) 1:00 – 3:45 PM lab section.** (All times are listed as CDT.)

1. Pre-Lab is due the following Wednesday at 1:00 PM. (At the start of lab.)
2. Lab Report is due the following Monday (by 11:59 PM).
3. You will give your Lab Performance and Oral Test during the next lab period. (The next Wednesday between 1:00 and 3:45 PM – it occurs during the lab.)

**Week      Lab Period (W 1:00 – 3:45 PM)      Preparatory Lecture (F 8:30 AM – 9:45 AM)**

|      |                                   |  |
|------|-----------------------------------|--|
| 1/20 | No Lab                            | Introduction and Review of Safety Guidelines         |
| 1/26 | No Lab                            | Transformers   |
| 2/2  | Transformer Experiment            | Bipolar Junction Transistors (BJT) with DC biasing   |
| 2/9  | BJT – DC experiment               | No Lecture   |
| 2/16 | BJT – DC experiment Cont'd        | Bipolar Junction Transistors (BJT) with AC biasing   |
| 2/23 | BJT – AC experiment               | Field Effect Transistors – FETs with DC biasing      |
| 3/2  | FET – DC experiment               | No Lecture   |
| 3/9  | FET – DC experiment Cont'd        | Field Effect Transistors – FETs with AC biasing      |
| 3/23 | FET – AC experiment               | No Lecture   |
| 3/30 | FET – AC experiment Cont'd        | Operational Amplifiers (Op Amps)                     |
| 4/6  | Op Amps Experiment                | Analog to Digital Converters – ADCs                  |
| 4/13 | ADC experiment                    | Digital to Analog Converters – DACs                  |
| 4/20 | DAC experiment                    | No Lecture   |
| 4/27 | ADC/DAC experiment Cont'd         | Proportional-Integral-Differential Controllers (PID) |
| 5/4  | PID Controllers Experiment Cont'd | No Lecture   |

**Grading Policy**

- 25% Pre-Lab
- 40% Lab Report
- 20% Lab Performance
- 15% Oral Test

| <b>Grade Range</b>   |                    |                     |
|----------------------|--------------------|---------------------|
| <b>A+</b> : 97 - 100 | <b>A</b> : 93 - 96 | <b>A-</b> : 90 - 92 |
| <b>B+</b> : 87 - 89  | <b>B</b> : 83 - 86 | <b>B-</b> : 80 - 82 |
| <b>C+</b> : 77 - 79  | <b>C</b> : 73 - 76 | <b>C-</b> : 70 - 72 |
| <b>D</b> : 69 - 60   | <b>F</b> : < 60    |                     |

## Course Policies

*Modality:* The lectures and labs will be conducted in-person.

*Attendance:* Regular and punctual attendance is required. For excused absences (such as sick leave which can be verified by doctor's note prior to class), students can request for lectures to be broadcast on MS teams. This option is not available for students who are able to attend the lecture.

*Make-up labs:* Attending labs is mandatory. If a student misses the lecture or lab due to business trip, family emergency, religious holiday etc. then student is obligated to inform the faculty immediately to make arrangements for a make-up lab session within 5 business day. A failure to do so may result in a grade of 0 for the lab regardless of the excuse for the absence. Unexcused absence will result in a grade of 0 for the missing lab.

*Late Work:* Each student must turn in individual work. Any Pre-Lab HW, Lab Report or Lab Performance and Oral Test will be reduced in credit by 25% per day late.

*Extra Credit:* None.

### *Class Citizenship:*

1. Students are expected to participate in class discussions.
2. The **students must complete the Pre-Lab and Lab report on their own**, without asking for help from others. The students must alone build the circuit, write the simulation codes (in PSpice, Multisim or Simscape). You cannot use codes developed by others.
3. The **students can form a group of two people to perform the experiment**. The students along with their lab partner will build with circuit and test them. You can ask for help from the TAs but don't expect the TAs to build the circuits for you.
4. If you violate the policies mentioned in 2,3 you will be referred to UTD's disciplinary committee and receive a failing grade on the assignment or for the entire class.
5. **The students will be required to describe the circuits they built and the operation of the circuit orally. This will be done during the assigned lab period.**
6. Please **note that the Pre-Lab is due before the start of the lab period**. Upload your assignment in eLearning. You may not be allowed to do your Lab until after you have uploaded your Pre-Lab. (See the late HW and reports policy above.) The reason is that the pre-Lab are designed to help you understand the lab measurements you will make. This prior knowledge is important to check if the results you obtained after the experiment is coherent with the pre-lab. If not, what could be the possible reasons.
7. The **students are required to prepare the Lab report on their own. The only common material between a student and student's partner is the data collected during the lab.**

### **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 <http://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 review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class. Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

***These descriptions and timelines are subject to change at the discretion of the instructor.***