

## Elements of Electrical Engineering

EEL 3003 Section 15960

**Class Periods:** Online

**Academic Term:** Summer A 2022

### **Instructor:**

Dr. Lilianny Virguez, [lilianny.virguez@ufl.edu](mailto:lilianny.virguez@ufl.edu)

**Office Hours:** Wednesdays 10:00 am-12:00 pm

**Outside office hours:** by appointment via Zoom - please e-mail first at least 12 hours before

### **Teaching Assistant/Peer Mentor/Supervised Teaching Student:**

Our course peer mentors/graders will offer online help hours, each session will have virtual assistance for students. All peer mentor sessions are for help with both calculation-based problems and Arduino Build Kit assistance. Online help hours will be held using the Zoom Conferences tool. You can attend any mentor hours for help, not just the one with your grading range.

**Peer Mentor Office Hours** (online): You should be able to see the zoom links on the canvas page under zoom conferences or on the course calendar.

If you have questions or need help outside of office hours, please use Canvas Discussion Board. This provides the most visibility enabling you to receive answers most efficiently from the UPIs, instructor, or your fellow students **(yes, please feel free to post answers - we all learn from each other)**.

**Preferred pronouns:** she, her, hers

**Inclusion Statement:** It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diversity that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. Your suggestions are encouraged and appreciated

**Lived Name/Pronoun Syllabus Statement:** I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

### **Course Description**

Introduces the theory and practice of electrical engineering for those not majoring in electrical engineering. Discusses circuits, machines, electronics and systems.

### **Course Pre-Requisites / Co-Requisites**

MAC 2313 and PHY 2049

### **Course Objectives**

- 1) Become familiar with common engineering circuit components.
- 2) Understand role of circuits across engineering majors for future multidisciplinary courses or projects.
- 3) Learn techniques to solve open-ended engineering challenges.
- 4) Understand core equations and numerical problem-solving techniques of introductory circuits.

5) Connect circuit theory and equations to practice and builds with physical circuits components.

**Materials and Supply Fees**

None

**Professional Component (ABET):**

**Relation to Program Outcomes (ABET):**

Outcome	Coverage*
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	High
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.	Medium
3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	Low
4. An ability to communicate effectively with a range of audiences	Low
5. 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.	
6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.	
7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty	Low

\*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

## Required Textbooks and Software

- 1) **Arduino Starter Kit - English Official Kit With 170 Page Book:** Each student should purchase their own Arduino Starter Kit. Half of your course homework assignments and some conceptual questions on the exam will be based on built items using the Arduino Kit. The kit is not sold in the UF Bookstore; you need to obtain online from either cc or Amazon.com.

From Arduino.cc: <https://store.arduino.cc/usa/arduino-starter-kit> (Links to an external site.)

OR

From Amazon (fast shipping if you have Amazon Prime): [https://www.amazon.com/Arduino-Starter-Kit-EnglishOfficial/dp/B009UKZV0A/ref=sr\\_1\\_3?s=electronics&ie=UTF8&qid=1525786729&sr=1-%203&keywords=arduino+starter+kit&dpID=414essH-EwL&preST=\\_SX300\\_QL70\\_&dpSrc=srch](https://www.amazon.com/Arduino-Starter-Kit-EnglishOfficial/dp/B009UKZV0A/ref=sr_1_3?s=electronics&ie=UTF8&qid=1525786729&sr=1-%203&keywords=arduino+starter+kit&dpID=414essH-EwL&preST=_SX300_QL70_&dpSrc=srch) (Links to an external site.)

- 2) **Laptop with a web camera and microphone** tested well ahead of each exam: You will need your laptop to use your Arduino Kit as well as take course exams, which are proctored online using Honorlock. Please read the following handout to prepare for an online exam proctored by Honorlock: <https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf> (Links to an external site.)

- 3) **Calculator:** A polar-rectangular mixed mode calculator

### Course Topics:

Introduction to Electronics, Theory of Electronics, Electric Current, Voltage, Conduction, Resistance, Resistivity, Conductivity, Heat and Power, Wire Gauges, Grounds, Electric Circuits, Ohm's Law & Resistors, Wheatstone Bridge, Voltage & Current Sources, Measuring Electronics, Combining Batteries, Open & Short Circuits, Kirchhoff's Laws, Thevenin's Theorem, Nodal Method, Mesh/Loop Method, AC Circuits, AC and Resistors, RMS Voltage, Capacitors, Inductors, Complex Numbers, Sinusoidal Sources, Power in AC Circuits, Resonant Circuits, Impedance, Wires, Cables, Connectors, Batteries, Switches, Operational Amplifiers, Diodes, Transformers, Motors

### Attendance Policy, Class Expectations, and Make-Up Policy

Lecture attendance is not required since all course items are provided or turned in online through Canvas. You must take your exams with Honorlock on the dates and during the exam hours window specified. It is your responsibility to make sure you follow all the guidelines established by the Honorlock system: <https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf> (Links to an external site.)

You are expected to watch every video. The videos are an important source of class content and communication channel about exams, grading, policies, and information that can have a profound effect on your outcome.

### Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (4)	5 each	20%
Arduino Reports (4)	5 each	20%
Exams (3)	20 each	60%
		100%

**All exams, assignments, and projects are to be completed independently by the individual student unless otherwise explicitly stated. Collaborative study is permitted, but each student must submit their own original work! Any violation of this policy will be considered a violation of the honor code and reported to the office of the Dean of Students (see the section below called University Honesty Policy for more details).**

**Exams:** There are three exams in the course, each exam is 60 minutes long. Exams will total 60% of your grade. Exams will be multiple choice (no partial credit), to reflect practice FE Exam questions in basic circuits.

**Homework and Arduino Reports:** Homework and Arduino build reports will make up 40% of your grade. All homework assignments are due, uploaded into Canvas as noted in the course calendar. Late assignments are not normally accepted for credit, but if they are turned in late, they will be accepted with a 10% penalty per hour late, i.e., no credit if more than 10 hours late. The summer A semester moves very fast, so you need to keep up with assignments! In the case of misgrade, you have one week from the date the individual assignment grade is posted to discuss that assignment grade with your grader.

### ***Grading Scale***

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
92 - 100	A	4.00
90.0 - 91.99	A-	3.67
88 - 89.99	B+	3.33
82 - 87.99	B	3.00
80.0 - 81.99	B-	2.67
78 - 79.99	C+	2.33
72 - 77.99	C	2.00
70.0 - 71.99	C-	1.67
68 - 69.99	D+	1.33
62 - 67.9	D	1.00
60.0 - 61.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### ***Students Requiring Accommodations***

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### ***Course Evaluation***

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### ***University Honesty Policy***

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### ***Commitment to a Safe and Inclusive Learning Environment***

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, [rbielling@eng.ufl.edu](mailto:rbielling@eng.ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto:nishida@eng.ufl.edu)

### ***Software Use***

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

### ***Student Privacy***

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

### ***Campus Resources:***

#### ***Health and Wellness***

##### **U Matter, We Care:**

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

**Counseling and Wellness Center:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

**Sexual Discrimination, Harassment, Assault, or Violence**

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto:title-ix@ufl.edu)

**Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

*Academic Resources*

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

**Library Support**, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center**, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

**Writing Studio**, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

**Student Complaints Campus:** [https://www.dso.ufl.edu/documents/UF Complaints policy.pdf](https://www.dso.ufl.edu/documents/UF%20Complaints%20policy.pdf).

**On-Line Students Complaints:** <http://www.distance.ufl.edu/student-complaint-process>.