

Elements of Electrical Engineering

EEL3003 Class Number: 25722

Class Periods: WEB

Location: WEB

Academic Term: Spring 2021

Instructor: Dr. Pamela Dickrell, pld@ufl.edu, 352-392-4524

Office Hours: TBA

Peer Mentors/Graders Help Hours: Our course peer mentors will offer online help hours for students. All peer mentor sessions are for help with both calculation based problems and Arduino Build Kit assistance. You can attend any mentor hours for help.

Peer Mentor Online Tutoring Hours (TBA):

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: Prereq: 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.

Material & Supply Fees: none

Relation to Program Outcomes (ABET):

The table below is an example. Please consult with your department's ABET coordinator when filling this out.

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
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	Low
3. An ability to communicate effectively with a range of audiences	Low
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	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Low

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

Textbook & Hardware/Software: There are two required items for this course, the first is considered the textbook requirement for this course and is available through Amazon (or Arduino.cc). The second is your laptop with a web camera and microphone for Honorlock supervised online exams. The two items are described below:

Required Item 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 Arduino.cc or Amazon here:

From Arduino.cc: <https://store.arduino.cc/usa/arduino-starter-kit>

OR

From Amazon (fast shipping if you have Amazon Prime): https://www.amazon.com/Arduino-Starter-Kit-English-Official/dp/B009UKZV0A/ref=sr_1_3?s=electronics&ie=UTF8&qid=1525786729&sr=1-3&keywords=arduino+starter+kit&dpID=414essH-EwL&preST= SX300 QL70 &dpSrc=srch

You only need one kit, so order from one place or the other, **just remember you need it in hand by the end of the first week of class! Late delivery of kit is not a valid excuse for not turning in the first Arduino Build Assignment**

This kit is awesome by the way, if you ever wanted to get into Arduino or tinkering/inventing, it is very easy to use and once you get started, you can build and create all kinds of small electronic items.

Required Item 2)

Laptop with web camera and microphone Honorlock tested well ahead of each exam: You will need your own laptop to use your Arduino Kit as well as take course exams, which are proctored online using Honorlock.

Well before exam 01, you need to read, re-read, check that you have everything needed for Honorlock testing, here is the student guide: <https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf> We will have an early "mini-honorlock practice quiz" that is your (and my) opportunity to test out Honorlock, this is a required mini-quiz to make sure your system is working properly prior to our first exam.

Recommended Reading: Will be announced with each homework.

Assignment Due Dates: Are posted in the Canvas calendar for each assignment.

Exams (60%): Exams are held online using Honorlock web proctoring services. There are three exams in the course, each exam is 60 minutes long. Exams will total 60% of your grade, with each exam counting 20% of your grade. Exams will be multiple choice (no partial credit), to reflect practice FE Exam questions in basic circuits. Well before exam 01, test out Honorlock with the mini-quiz under the same conditions, computer, microphone, camera, planned exam taking location, and internet. Exam dates and start times are posted in Canvas from the first day of class, all sections students take the exams the same scheduled nights/times online using Honorlock proctoring.

Calculator for Exams: Only non-graphing calculators permitted on exams, you can use a two-line scientific calculator. It should not be a model with a graphing screen, only 2-3 typed lines for calculations. (Please do not try to take the exam with a graphing calculator, you will not be allowed to use it, Honorlock will consider it a mark of cheating, they are screening and will ask you to hold up your calculator as part of the process.)

Homework (15%): Homework will make up 15% of your grade. There are 5 homework assignments. All homework assignments are due, uploaded into Canvas before 11:59pm on Fridays as noted in the course calendar. In case of misgrade, you have one week from the date the individual assignment grade is posted to discuss that assignment grade with your grader. Late assignments are not normally accepted for credit, but if they are turned in before 11:59pm the Monday immediately after the Friday due date of that individual assignment they will be graded with a 20% penalty for being late before additional points are taken off for errors.

Arduino Builds (15%): Arduino Builds will make up 15% of your grade. There are 3 Arduino Build Lab reports (A, B, and C). All Arduino Build assignments are due, uploaded into Canvas before 11:59pm on Fridays as noted in the course calendar. In case of misgrade, you have one week from the date the individual assignment grade is posted to discuss that assignment grade with your grader. Late assignments are not normally accepted for credit, but if they are turned in before 11:59pm the Monday immediately after the Friday due date of that individual assignment they will be graded with a 20% penalty for being late before additional points are taken off for errors.

Arduino Design Project (10%): An Arduino Design Project using your kits will make up 10% of your grade. Specific requirements of this project will be discussed in more detail about half-way through the semester.

Graders:

TBA

Course Topics (week by week distribution of topics posted in Canvas): 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 and Expectations: Lecture attendance is not required since all course items are provided or turned in online through Canvas.

You are responsible for attending the online exams for the dates and times set forth for each exam in the Canvas course calendar. You must take your exams on the dates and during the exam hours window specified. It is your responsibility to make sure you have the needed technology and identification for Honorlock proctored exams.

Grading Scale:

A = 92 – 100
A- = 90 – 91.99
B+ = 88 – 89.99
B = 82 – 87.99
B- = 80 – 81.99
C+ = 78 – 79.99
C = 72 – 77.99
C- = 70 – 71.99
D = 60 – 69.99

Less than 59.99 will result in an E grade

A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please

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

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework (5)	3 points each	15%
Arduino Builds (3)	5 points each	15%
Exams (3)	20 points each	60%
Arduino Design Project	10 points	10%
TOTAL	100 points	100%

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and

respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-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
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, 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 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

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://care.dso.ufl.edu>.

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