

EEL 3111C – Circuits 1 Summer 2023



Credits: 4

Meeting Times: MWF 5th period Section 11240 (2:00 p.m. -3:05 p.m.)

Instructors: Keith J. Rambo 534 NEB rambo@ufl.edu 352-392-4243
Office Hours: M W F NEB 534 12:00-1:00, or by Zoom/Appointment

TA/Lab: Elsa Osmani eosmani@ufl.edu Office Hours: TBD
Tianjun Wang wang.ti@ufl.edu Office Hours: TBD

General Description: Material will include; Circuit Variables, Circuit Elements, Simple Resistive Circuits, Techniques of Circuit Analysis, The Operational Amplifier, Inductance, Capacitance, Mutual Inductance, Response of First-Order RL and RC Circuits, The Natural and Step RLC response, Sinusoidal Steady-State Circuit analysis, Sinusoidal Steady State Power, Three-Phase Balanced Power, and Frequency Selective Circuits.

Objectives: To build new concepts and ideas on concepts presented. Develop an understanding of the explicit connections among the many circuit analysis tools and methods. Develop problem-solving skills that rely on a solid conceptual foundation. Develop different approaches to solving a problem *before* writing a single equation. To introduce realistic engineering experiences at every opportunity. Develop the insights of a practicing engineer. Engage in life-long learning. After successful completion of this course, the student will have a basic understanding of:

- | | |
|--|------------|
| • SI Units, Passive Sign Convention, Ohm's Law, KVL, KCL | Week 1-2 |
| • Series, Parallel, Voltage and Current Division, Δ -Wye, Nodal, and Mesh | Week 2-3 |
| • Source Transform, Thévenin and Norton, Superposition, Real Circuit Examples | Week 3-4 |
| • Operational Amplifiers, Capacitor, Inductor, The Natural and Step Response | Week 5 |
| • Unbounded, Step and Switched Response, The Diode, Frequency Selective Circuits | Week 6-9 |
| • Parallel RLC, Stepped, Natural and Damped Response | Week 8 |
| • Sinusoidal Response, Phasors, and Source Transforms in the Frequency Domain | Week 9-10 |
| • Power RMS and Complex, 3-Phase Circuits | Week 11-12 |

Course Pre-Requisites / Co-Requisites: [MAC 2312](#) and [PHY 2049](#).

Materials and Supply Fees: \$34.50

Required Text: ELECTRIC CIRCUITS, NILSSON & RIEDEL -11th ed. (11E (VitalSource E-Book)) ISBN 978-01-347472-24
See page 6 of syllabus for REQUIRED VitalSource E-Book purchase instructions.

Calculator: A *TI-Nspire CAS* or newer, **csolve** capable and **polar-rectangular mixed mode** capable calculator will be required.

Notebook: Due to the online material used in the course, **a notebook is required** to show your work to determine how your solutions are derived. All work must be shown to instructors and TA's in a notebook.

Grading: Class attendance is **required**. There will be *three* tests, a *Laboratory*, *Class Quiz/Attendance*, *Homeworks*. **Attendance will be taken.** Homework turned in late will not be given credit.

For those taking the Pearson Adaptive Follow-up Problems they will be worth up to 1.5% extra credit on the Homework Problems.

Quiz/Test/Exam: Calculator use and other supporting material will be determined by the instructor for each test/exam. No other electronics are allowed. A formula sheet will be provided on Tests/Exam.

The tests (1-3) will be given in evenings as a during term exam as part of a combined help session/test.

Test	Date	Tentative Chapters
# 1	6/16/23 (Friday)	1 - $\frac{1}{2}$ of 6
# 2	7/19/23 (Wednesday)	(2 nd $\frac{1}{2}$ of 6) , 7-8, & (Freq. Select $\frac{1}{2}$ of 14)
#3	8/11/23 (Friday)	1-11, Freq. Select $\frac{1}{2}$ of 14

An overall **test score**, **T**, between 0 and 100, will be calculated for each student as shown below.

$$T = \frac{15*T1+155*T2+35*T3}{0.65}$$

Where **T1**, **T2** and **T3** are each of the three tests weighted as shown above.

The laboratory will be worth up to 15% of the final grade If the semester lab grade (**L**) falls below a C (75%) then the lab grade (**L**) will be weighted as: $L = (\text{Final Lab Grade}) \times 0.50$ and that value will be applied in the formula below.

The score, **S_{Total}**, for the course will be calculated as follows.

$$S = 0.10 (\text{Class Quiz and Attendance}) + 0.10(\text{Homework}) + 0.65(\text{Tests}) + 0.15(\text{Lab})$$

$$S_{Total} = S + .015(\text{Adaptive Extra Credit})$$

******* WARNING: Canvas Posted Scores (S) Do Not Reflect the Actual Score (S). *******

Grades will be assigned based on the table shown below.

Overall Score S	Grade
92.5-100	A
90-92.499...	A-
87.5-89.99...	B+
82.5-87.499...	B
80-82.499...	B-
77.5-79.999...	C+
72.5-77.499...	C
70-72. 499..	C-
67.5-69.99...	D+
62.5-67.499...	D
60-62.499...	D-
Less than 60	E

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 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/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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 Conduct Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. 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
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@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 at 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 are 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: <https://counseling.ufl.edu>, 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](mailto:title-ix@ufl.edu), 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://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

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

Please note that EEL 3111C will be participating in the UF All Access program for the Summer 2023 semester. Students will have two options to gain access to the required MasteringEngineering materials when classes begin in January. Students will have to choose to “Opt-In” to MasteringEngineering access through a link provided in Canvas once classes begin for a reduced price and pay for these materials through their student account. Students who do not choose this option will be able to purchase a standalone code through the UF Bookstore. Both options provide access to the same online materials however the discounted price will only be available through the Gator1 Central portal. You can log in to the Gator1 Central portal and view your participating courses when classes begin here: <https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?TASK=INCLUDED>

The order of operations to get registered for access to the Pearson Materials in the Summer:



SCREENSHOTS

UF ALL ACCESS



Opt In Process

1. Sign in to your Gatorlink portal

2. View your courses available for opt in

- Check off the course you wish to opt in.
- Authorize the Charges
- Select “Opt In”

4. Copy the access code on the screen.

Registration for MyLab & Mastering with Canvas

- Log in to your Canvas Course.
- Click on the “MyLab and Mastering” tool button on the left-hand navigation bar.
- Click “Open MyLab and Mastering
- Enter your Pearson account information or create an account.
- When you get to the payment screen – enter the access code you received when you opted in.

EEL3111C – Circuits 1 Laboratory

Summer 2023

Lab:

Labs start at the third week of class and your section time will be determined by the end of the first week through an on-line survey. All labs take place in NEB 250 and lab instructor office hour times and locations can be found on the course's canvas page.

The laboratory portion of the course is made up of nine labs and a final project. Each lab has a pre- lab, pre-lab quiz, in-lab portion, and a write up. Labs occur every week until the end of the semester, see the lab schedule (subject to change) in the lab rules and policies.

Labs are 15% of the total course grade which is broken down to 10% for every lab and 20% for the final project, giving a total possible score of 100% for the lab portion of the course.

All labs have a strict attendance, submission, and completion policy:

- **Failure to complete the pre-lab submission, pre-lab quiz, and in-lab demonstration on time, will result in a zero for the entire lab.**
- **Arriving more than 5 minutes late to the start of lab will result in the student being barred from completing the lab and receiving a zero for the entire lab.**
- **Failure to submit write ups on time will also result in a zero for a given write up, but not the entire lab. No late work is accepted.**

Making up labs is on a case-by-case basis and are generally only offered for reasonable excuses. The following are not reasonable excuses:

- **Missing the lab time because of a confusion between period numbers and period times.**
- **Arriving late to lab because of a confusion about the start time.**
- **Skiping lab to attend a review session or study for a test.**

Professional Component (ABET):

To build new concepts and ideas on concepts presented. Develop an understanding of the explicit connections among the many circuit analysis tools and methods. Develop problem-solving skills that rely on a solid conceptual foundation. Develop different approaches to solving a problem ***before*** writing a single equation. To introduce realistic engineering experiences at every opportunity. Develop the insights of a practicing engineer. Engage in life-long learning. After successful completion of this course, the student will have a basic understanding of:

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This course consists of 3 credits of Engineering Science and 1 credit of Engineering Design;

Relation to Program Outcomes (ABET):

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	
3. An ability to communicate effectively with a range of audiences	Medium
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	Low
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Medium
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	