

EEL 3211C – Basic Electric Energy Fall 2022 Flipped Classroom



Credits:	4		
Meeting Times:	MWF 8 th period	(3:00 p.m. -3:50 p.m.)	NEB 101
	Class Section 11878 Lab Time M 11-E1	(6:15 p.m.- 8:10 p.m.)	NEB289
	Class Section 11879 Lab Time T 11-E1	(6:15 p.m.- 8:10 p.m.)	NEB289
	Class Section 11880 Lab Time W E2-E3	(8:20 p.m.- 10:10 p.m.)	NEB289
Instructor:	Keith J. Rambo	534 NEB	rambo@ufl.edu 352-392-4243
	Office Hours:	M W F	TBD, or by appointment
TA/Lab:	David Blow NEB 289	david.blow@ufl.edu	Office Hours: Lab Times
NINJA	Abigail Bryant NEB 222.	abigail.bryant@ufl.edu	Office Hours: TBD

General Description: Analysis and modeling of power system components. Magnetic circuits, energy conservation, transformers, AC and DC rotating machines, introduction to power transmission.

Objectives: Learn the basics magnetic circuits, transformers, motors, and generators. Design circuits and systems to meet desired needs. Engage in life-long learning. After successful completion of this course, the student will have a basic understanding of:

- MATLAB examples and Electromagnetic circuits and systems Week 1-3
- Three phase circuits including wye and delta configurations Week 3-4
- Transformer function, characteristics and uses Week 5-7
- AC machinery Week 8-9
- Synchronous Machinery, characteristics and uses Week 9-11
- Induction Motors, characteristics and uses Week 12-13
- DC Machinery, characteristics and uses Week 14
- Transmission Lines, characteristics Week 15

Required Text: Electric Machinery Fundamentals, by Stephen J. Chapman – 5th ed. ISBN 0073529540 e-Book

Recommended Text: Electric Machinery and Power System Fundamentals, by Stephen J. Chapman – 1st ed.

ISBN 978-00-712262-0

Calculator: A *TI N-Spire* or equivalent polar-rectangular mixed mode calculator will be *required*.

Internet Bandwidth Requirement: **You must have 10 Mbps download bandwidth speed to take this course.**

This is to ensure that you can view video without buffering as defined by UF Mediasite bandwidth requirements.

Measurements of bandwidth should be tested at <http://speedtest.net> to verify availability of bandwidth (home or campus).

Campus Wireless Access Points (WAP) generally (based on number of users on a single WAP) have sufficient bandwidth to accommodate this requirement.

Live In-Person Class with recording: All classes will be in-person only in their respective classrooms and will be recorded. Recordings will be available for review approximately one week later after the in-person class session.

Grading: Class attendance *for the entire period* and *participation* is required. There will be *two* tests, a final, Laboratory, in/out of class *homework* and *daily quizzes via PollEverywhere*. *Homework* turned in *late will not be given credit* as solutions will be reviewed and video posted following the homework due date.

For the daily quizzes, you must log in with your gatorlink id. Each class period will have one quiz associated with that period unless otherwise notified on Canvas.

Quiz/Test/Exam: One 3" X 5" card will be allowed to assist, as well as calculator. No other electronics are allowed. A ruler will be allowed and will be helpful in interpreting graphs. Formula sheet will be provided with formulas from Chapman on Tests/Exam. Each quiz also contains bonus point(s) that are mostly based on architecture of the UF campus. You will see me standing in front of, places on campus, which you should be able to identify as a member of the Gator Nation (hint: check out.... <http://web.uflib.ufl.edu/ufarch/historic.htm> and <http://web.uflib.ufl.edu/ufarch/gallery.htm>).

The tests (1-2) will be given in evenings as part of a combined help session/test starting at 7:00 PM.

Test	Date	Tentative Chapters
1	TBD	1-3
2	TBD	4-7
Final	12/16/22 10:00 p.m.-12:00 p.m.	1,2,3,4,5,7,8,9
Homework	In Class	

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

$$T = \frac{(0.20T_1 + 0.20T_2 + 0.25F)}{0.65}$$

Where T_1 , T_2 , and F (Final) are each of the two tests and final weighted as shown above.

The laboratory will be worth up to 20% of the final grade. If the semester lab grade (**L**) falls below a C+ (77.5%) 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**, for the course will be calculated as follows assuming that **HW** represents the overall homework score.

Then:

$$S = 100\% = 3\%(\text{Daily Quizzes}) + 12\% \text{ HW} + 65\% \text{ T} + 20\% \text{ L.}$$

***** 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 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: <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**, 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>.

EEL3211C - Electrical Energy Conversion Laboratory

Fall 2022

I. Catalog Description

Electric energy conversion, devices and systems.

II. Co-requisites

None

III. Course Objectives

The main purpose of this lab is to familiarize the student with the main areas of study of conventional electric energy conversion. This includes Power Measurement & Instrumentation, Transformers, DC Motors & Generators, Induction Machines, and Synchronous Machines.

IV. Lab TA: Brenden Mears

- a. Phone:
- b. Email: mearsb@ufl.edu

V. Class Nija TA: NA

VI. Meeting Location

NEB 289

VII. Grading

The course will be composed of the following:

- Lab Reports
- Participation and Prelab
- Quizzes

VIII. Grading Scale

Letter grades are based on the table below.

Overall Score	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

IX. Lab Policies & Expectations

- a. Groups: Beginning with Lab 1, students will form groups of two, with each group getting a separate workstation.
- b. Preparation: The student is expected to read and understand the laboratory procedure before starting the experiment, and to have answers for any questions contained in any assigned prelabs.
- c. Safety: All safety requirements are outlined in the lab manual and must be followed at all times.
- d. Reports: Lab Reports are due by the start of the next lab. Each member of every group is responsible for their own lab report. For more information on report structure and grading, refer to the lab manual.
- e. Make-Up Labs: If a lab cannot be attended, send the TA an **email prior** to the lab to arrange a make-up.
- f. Late Attendance: If a student is 10 minutes late to class, the student will not be allowed to perform the lab that day or turn in a lab report.
- g. Late Lab Reports: Completed lab reports are due the following lab (Usually every two weeks). If a lab report is not turned in during the first 10 minutes of the following lab, there is a 25% penalty. If it is turned in 1 week after the due date there will be a 50% penalty.

X. Lab Schedule- TBD