

Syllabus: ECE 211 Electric Circuits

Version: Jan 2, 2025

Face to Face (F2F) Delivery

Prerequisites: C- or better in ECE 200

Corequisite: ECE 220

Instructors

Section 001:

Dr. Jennifer Marley

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Section 002:

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Office Hours

Please see the class website for the latest information on office hours.

Course Description

Introduction to theory, analysis and design of electric circuits. Voltage, current, power, energy, resistance, capacitance, inductance. Kirchhoff's laws, node analysis, mesh analysis, Thevenin's theorem, Norton's theorem, steady state and transient analysis, AC, DC, phasors, operational amplifiers, single and three phase power, coupled circuits, transfer functions, frequency response, Bode plots, resonance, filters, two port networks

Course Objectives

By the end of this course, the student should be able to:

1. Explain the concepts and parameters associated with voltage, current, power, energy, resistance, capacitance, and inductance.
2. Apply Kirchhoff's laws, linearity, superposition, and Thevenin's theorem in the design and analysis of circuits.
3. Analyze AC circuits involving active circuit elements and elementary amplifiers.
4. Determine the transient response of energy storage elements using periodic functions, RMS values and phasors.
5. Demonstrate the ability to analyze sinusoids in steady-state response, resonance, Q, and bandwidth.
6. Graph the frequency response of the circuits.

Grading

1. 3 Exams: 60%
2. Final Exam: 20%
3. Problem Labs: 4% (Lowest problem lab grade will be dropped)
4. Analog Discovery Circuits: 4%
5. Connect Homework: 4% (Lowest homework grade will be dropped)
6. Turn-in Homework: 4% (Lowest homework grade will be dropped)
7. Attendance and Participation: 4%
8. The following cutoffs (inclusive) for course letter grades: A+: 97%, A: 93%, A-: 90%, B+: 87%, B:

83%, B-: 80%, C+: 77%, C: 73%, C-: 70%, D+ 67%, D: 63%, D-: 60%

Audit

Audits are not allowed for ECE 211.

Credit Only

A grade of C- or better is required for credit (a grade of S).

Tests

There are three semester Tests and a Final Exam. Tests and the Final must be taken on-campus at the specified date and time. Tests taken at the DRO testing center must overlap the specified time. For emergencies and documented, university qualified excused absences ONLY, contact the instructor as soon as possible to schedule a make-up test. Students will be required to provide documentation of the excused absence.

For questions about grading

Students are required to submit grading issues for the tests and homework in an email to the instructor within 1 week from the time the graded work and solutions are made available to students.

Final Exam Date and Time

Refer to the final exam date and time posted on the ECE 211 Moodle website.

Problem Lab

Attendance is mandatory and each lab session is worth 100 points. Problem Labs are worth 4% of your total course grade for the semester. If you attend and work the entire time on the problem lab material, you will receive a 100/100 grade.

Homework

There are two parts to each homework assignment.

- TURN-IN Homework: scan and upload a clear copy on the 211 course website in Moodle in the link pertaining to that assignment. Homework solutions are posted very soon after the due date/time.
 - Late Homework is NOT accepted. It is highly recommended to complete and submit Homework well ahead of the deadline to allow for unexpected problems. Homework will always be posted early and is always due at midnight on the due date. Moodle will accept submissions within a short grace period around the midnight deadline. However, chronic late submission of HW will result in a HW grade deduction.
 - RULES FOR FULL CREDIT: The circuit must be redrawn for each homework problem. Label any unknown voltages or currents used in your work. For each equation specify “*what and where*”: *what* circuit law you used, and *where* on the circuit it was applied. Some examples: “Ohms law at R1”, “KCL at node A”, or “KVL left loop”. Box your final answer and be neat Start each problem on a new page and submit in the correct order orientation. Points will be deducted from your homework grade if ALL of the above instructions are not followed.
- CONNECT homework is completed online and is due at the time specified on the Connect website. Multiple attempts are allowed. **The highest grade of the multiple attempts is used as the grade**

for that assignment.

Drop Deadline

The census date is the last day to drop without receiving a W.

<https://studentservices.ncsu.edu/calendars/academic/>

Students taking only one class will receive a term withdrawal if they drop the class at any time.

Academic Integrity

Students are expected to work within the letter and spirit of the NCSU Code of Student Conduct. Refer to the NCSU web page for code of student conduct: <http://policies.ncsu.edu/policy/pol-11-35-01>

Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Resource Office at 1900 Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see: <https://dro.dasa.ncsu.edu/>

Supporting Fellow Students in Distress

As members of the NC State Wolfpack community, we each share a personal responsibility to express concern for one another and to ensure that this classroom and the campus as a whole remains a healthy and safe environment for learning. Occasionally, you may come across a fellow classmate whose personal behavior concerns or worries you, either for the classmate's well-being or yours. When this is the case, I would encourage you to submit a NC State CARES referral: go.ncsu.edu/CARES. Although you can report anonymously, it is preferred that you share your contact information so they can follow-up with you personally.

Inclusion

In an effort to affirm and respect the identities of all students in the classroom and beyond, please let me know if you wish to be referred to using a name and/or pronouns other than what is listed in the student directory.