

ECE 211 Electric Circuits

Prerequisites: C- or better in ECE 200

Corequisite: ECE 220

Instructors

- Cecilia Townsend
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Office Hours

Cecilia Townsend: Before & after class, drop by EB2 3006 or e-mail for an appointment.

Keith Townsend: Before & after class, drop by EB2 2104 or e-mail for an appointment.

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 - NCSU

3 Exams: 60%

Final Exam: 24%

Problem Labs: 4% (Lowest problem lab grade will be dropped)

Analog Discovery Circuits: 4%

Connect Homework: 4% (Lowest homework grade will be dropped)

Turn in Homework: 4% (Lowest homework grade will be dropped)

A+ = 97.0-100, A = 93.0-96.9, A- = 90.0-92.9

B+ = 87.0-89.9, B = 83.0-86.9, B- = 80.0-82.9

C+ = 77.0-79.9, C = 73.0-76.9, C- = 70.0-72.9

D+ = 67.0-69.9, D = 63.0-66.9, D- = 60.0-62.9

F= 59.9 and below

Audit

Audits are not allowed for ECE211

Credit Only

A grade of C- or better is required for credit.

Exams

Three semester exams and a final exam - Make up exams are not given. For university excused absences the 2 exams taken will count 50% and the final 34%.

For questions about grading:

Grading problems (including tests and homework) are required to be submitted with written explanations to either ECE211 instructor within 1 week of the time the homework or test was returned in class (NOT 1 week after you pick up the graded work). If you do not attend class to pick up graded homework and tests, you may not have time to submit grading issues for review.

Final Exam Time: See the University exam calendar:

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

Problem Lab

- Attendance is mandatory 10 points per problem lab session. 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 get 10/10.

Homework

- Homework is due at the beginning of class. Your name and homework number must appear in the upper right hand corner of the front page. The circuit must be re-drawn for each homework problem. Label any unknown voltages or currents used in your work. Specify where each equation comes from (i.e. Ohms law, KCL at node a, KVL left loop). Box your final answer and be neat. Do not fold your paper in half, write on only one side of the paper, start each new problem on a new page, and staple your homework together in the correct order. Points will be deducted from your homework grade if ALL of the above instructions are not followed.

Late Policy

- No late homework is accepted after class ends. Homework is accepted up until the end of class with a 10% deduction.
- Connect homework is due at 8:00 am the day the turn in homework is due. The site closes at exactly 8 am and will not reopen for late submissions.

Drop Deadline: The census date is the last day to drop below 12 credit hours or drop without receiving a W. Between the census date and the drop deadline, students can drop and receive a W or change to pass/fail and receive an S or U.

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

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://www.ncsu.edu/student_affairs/osc/

Students with Disabilities

Statement for 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, 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 safe environment for learning. Occasionally, you may come across a fellow classmate whose personal behavior concerns or worries you. When this is the case, I would encourage you to report this behavior to the NC State Students of Concern website:

<https://ncstatecares.dasa.ncsu.edu/>. 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 transgender students in the classroom and beyond, please contact me if you wish to be referred to using a name and/or pronouns other than what is listed in the student directory.