
ECE 211 - Circuits I

www.BisonAcademy.com

Course Information:

Instructor: Jake Glower
Office: ECE 201A
Class Times: Online
Text: Electric Circuits, Nilsson & Riedel
The edition doesn't matter for EE 206 - buy the used \$5 edition.
Note that the edition does matter for ECE 311 however.
On-Line Reference: www.BisonAcademy.com

Bulletin Description:

Linear electric circuits. Component models, circuit laws, transient analysis, design issues, computer tools. Prereq: MATH 166.

Course Objectives:

By the end of the semester, students should:

- Be able to solve for the currents and voltages in a circuit with steady-state DC and AC inputs.
- Be able to write N equations to solve for N unknowns using Voltage-Nodes and Current-Loop techniques
- Be able to design amplifiers with gains less than one, more than one, and with a negative gain.
- Be able to analyze mathematical functions with complex numbers.
- Be able to use circuit simulators (CircuitLab) to simulate the response of circuits to steady-state inputs.
- Be able to build circuits in lab and measure the steady-state response.

Text Book & Bison Academy:

Any edition of Electric Circuits works for Circuits I (older editions sell for \$5 on Amazon). The newer editions have different homework problems (which you'll need for Circuits II). In Circuits I, I make up my own homework assignments so I can post the solutions. Likewise, the edition doesn't really matter. (buy the cheapest one you can). Daily lecture notes (and eventually video tutorials) are posted on Bison Academy.

Circuits I and Circuits II

Circuits I covers the analysis of RLC circuits in steady-state. The main techniques we'll be using are current-loops and voltage nodes: techniques which let you write N equations to solve for N unknown voltages or currents. Initially, we look at DC analysis of circuits where we work with real numbers. Towards the second half of the course, we start using complex numbers, which allow us to analyze circuits with sinusoidal inputs (phasor analysis).

Circuits II picks up where Circuits I leaves off and looks at designing circuits to act as filters (such as a sub-woofer), analysis of circuits with periodic inputs which are not sine waves, and the transient analysis of circuits.

Required Student Resources:

- Calculator capable of complex numbers
HP35S recommended (\$50 from Amazon)
Most ECE students use TI84 Plus (\$100 from Amazon)
- CircuitLab
Free to all NDSU students (register using your @ndsu.edu email address)
- Matlab
Free to all NDSU students (register using your @ndsu.edu email address)

Evaluation Procedures and Grading Criteria

Grades will be the average of the following:

Homework & Labs	Exams (x3)	Final Exam
25%	25% each	none

Grades are rounded to the nearest 1%, with your final grade being

F	D	C	B	A
59% or less	60% - 69%	70% - 79%	80% - 89%	90% or more

Homework & Lab Sets and Groups

Homework sets are assigned on a weekly basis and are due the following Monday. Students may work in groups of 1 to 2 on homework sets. If you work in a group of 2, you please turn in one assignment per group with both of your names on it.

Note that tests are individual effort - meaning that if you work in a group, make sure each person understands each problem. You'll see them again on the test.

Labs are part of each homework set. Each week, you'll be asked to

- Analyze and design circuits related to that week's lectures
- Simulate these circuits using CircuitLab to verify your calculations, and
- Build one or more of these circuits using components from your lab kit.

Lab kits are free to students over the summer (one per student) and will be mailed out in early May.

Exams & Class Schedule

Summer term lasts twelve weeks. This is split into three parts:

- Three weeks of lectures
One week for review and exam #1
- Three weeks of lectures
One week for review and exam #2
You can retake exam #1 if you wish
- Three weeks of lectures
One week for review and exam #3
You can retake exam #1 and #2 if you wish

The idea behind retaking exams is to encourage everyone to get really good at circuit analysis. All follow-on courses in ECE rely upon material presented in Circuits I. If you get really good at this material, all following courses will be a lot easier.

Legal Stuff:

Attendance: According to NDSU Policy 333 (www.ndsu.edu/fileadmin/policy/333.pdf), attendance in classes is expected. Students are responsible for the material covered in class and in assignments regardless of their attendance. Note that all lecture notes, homework sets, and solutions are available on-line at www.BisonAcademy.com

Students with Special Needs: Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office (www.ndsu.edu/disabilityservices) as soon as possible.

Academic Honesty: The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of the Provost. Informational resources about academic honesty for students and instructional staff members can be found at Standards for Academic Honesty & Integrity at NDSU: Student Resources and Standards for Academic Honesty & Integrity at NDSU: Faculty.

Academic Honesty Defined: All written and oral presentations must “respect the intellectual rights of others. Statements lifted verbatim from publications must be cited as quotations. Ideas, summaries or paraphrased material, and other information taken from the literature must be properly referenced” (Guidelines for the Presentation of Disquisitions, NDSU Graduate School).

FERPA Statement: Your personally identifiable information and educational records as they relate to this course are subject to FERPA.

ECE Honor Code: On my honor I will not give nor receive unauthorized assistance in completing assignments and work submitted for review or assessment. Furthermore, I understand the requirements in the College of Engineering Honor System and accept the responsibility I have to complete all my work with complete integrity.

Veterans and Student Soldiers: Veterans and student soldiers with special circumstances or who are activated are encouraged to notify the instructor in advance.