
ECE 320 Electronics

Summer 2026 www.BisonAcademy.com

Course Information:

Instructor: Jacob Glower
Class Times: Online
Labs: Part of homework sets
Lab kits are provided for each student
Office Hours: Monday, 8am - Noon
Available throughout the summer (email to contact me)
Text: Bison Academy (free)
Microelectronic Circuit Design by Richard Jaeger (\$7 used from Amazon)
On-Line Reference: www.electronics-tutorials.ws/index.html

Bulletin Description:

Characterization, modeling, and analysis of digital circuits using diodes, BJTs, FETs, and Op Amps. 4 one-hour lectures, 1 two-hour laboratory each week for 10 weeks. Prereq: EE 206. F, S

Course Objectives:

By the end of the semester, students should:

Digital Electronics

- Explain how current flows in a semiconductor via holes and electrons
- Explain how diodes and transistors operate
- Design and analyze diode circuits using nonlinear and ideal-diode models
- Design and analyze transistor circuits with binary outputs, and
- Design and analyze op-amp circuits with binary outputs

Analog Electronics

- Explain how to put a transistor into the active region
- Design and analyze transistor circuits with analog inputs and outputs,
- Design and analyze filters to meet design requirements, and
- Design and analyze op-amp circuits with analog inputs and outputs

Summer 2026:

Over the summer, ECE 320 is only offered as an on-line course.

Spring and fall semester, ECE 320 is offered:

- In-Person: Students are welcome to attend class at the designated class time and location.
- Live-Stream: Students are also welcome to live-stream the class. A link with how to connect will be sent out at the start of the semester on BlackBoard and to your NDSU email address.
- On-Line: Students are also welcome to take the class on-line and fit lectures into their own schedule.

On-line material is available to everyone - regardless of how they registered for the class. This material includes

- Each day's lecture,
- Detailed lecture notes for each day,
- YouTube videos for each lecture,
- Daily handouts,

- YouTube discussions going over the handouts,
- Homework sets, and
- Solutions to previous homework sets (which are usually similar to this semester's homework)

Required Student Resources:

- Calculator capable of complex numbers
HP35S recommended (\$57 from Amazon)
Most ECE students use TI84 Plus (\$100 from Amazon)
- Ability to make videos and preferably post them on YouTube.
- ECE 320 Lab Kit
Free to all ECE 320 students
- Matlab & Matlab account
Free to all NDSU students
Use your @ndsu.edu email address
@ndus.edu does not work
- CircuitLab & CircuitLab account
Free to all NDSU students
Use your @ndsu.edu email address
@ndus.edu does not work

Evaluation Procedures and Grading Criteria

Grades will be the average of the following for Section 2 (online):

	Homework & Labs	Tests	Final Exam
ECE 320	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 & Labs: Each week, there will also be homework assignments coupled with lab exercises. These homework problems cover topics related to that week's lectures. Typically, you will analyze and/or design several electronics circuits, then simulate these using CircuitLab to validate your design. The lab will then be to build and test one of these circuits using components from your lab kit.

All homework should be submitted electronically on Blackboard (preferred) or emailed to jacob.glower@ndsu.edu

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.