

ECE 331-001,-605 Spring 2026

Principles of Electrical Engineering

Description: Concepts, units, and methods of analysis in electrical engineering. Analysis of d-c and a-c circuits, characteristics of linear and non-linear electrical devices, transformers.

Prerequisite: MA 241, PY 208

Lecture: TuTu 10:15-11:30 am 2213 EB3

Instructor: Dr. Ginger Yu email: dgyu@ncsu.edu

Office hours: in person or via Zoom or by appointment; [Office Hours Calendar](#) (browser must be logged into NCSU account) – can typically be available before or after class w/notice

Web page: [Moodle](#) (must be registered to log on)

Textbook:

Electrical Engineering: Principles and Applications, Allan R. Hambley, Prentice Hall, 7th Ed/2018, ISBN: 0-13-448414-2/978-0-13-448414-3; www.pearsonhighered.com

This class is taking part in NC State's Course Ready program. Course materials are delivered electronically on Moodle. Students have until January 26, 2026 to decide if they want to opt of of CourseReady.

Sections covered (in approximate order as they will be covered in class):

Chapter 1 – Introduction

Chapter 2 – Resistive Circuits (2.1-2.7)

Chapter 14 – Operational Amplifiers (14.1.-14.4)

Chapter 3 – Inductance and Capacitance (3.1-3.5)

Chapter 4 – Transients (4.1-4.4)

Chapter 14 – Operational Amplifiers (14.9)

Appendix A – Complex numbers

Chapter 5 – Steady-State Sinusoidal Analysis (5.1-5.5, 5.7)

Chapter 6 – Frequency Response (6.1-6.3, 6.5-6.9)

Chapter 15 – Magnetic Circuits, Ideal Transformer (15.3, 15.5)

Chapter 10 – Diodes (10.1, 10.3, 10.4, 10.6, 10.7)

Chapter 16 – DC motors (16.1)

Chapter 17 – AC motors (17.1)

Chapter 12, 13 – Transistors (12.1, 12.7, 13.1-13.2)

Chapter 7 – Logic Circuits (7.1-7.3)

Grading

Homework (10)	10%
Exams (3)	63%
Final	21%
Project	6%

Class policies and procedures

First day of class	Jan 13
No class	Feb 17; Mar 17, 19; Apr 2 (TBD)
Homework (10)	Jan 20, 27; Feb 3, 19, 26; Mar 10, 24, 31; Apr 14, 21
Exams (3)	Feb 5; Mar 4; Apr 9
Last Day to drop w/out grade	Mar 25
Last day of class	Apr 28
Scheduled final	Thursday, Apr 30, 8:30-11 am

- Email and class web page will be used to make announcements. The web page has the syllabus, useful weblinks, assignments, and access to your homework assignments and grades.
- An online homework system, WebWork, will be implemented on Moodle for assignments. Each homework will also have 1-3 problems that are to be submitted on Moodle. *The lowest total homework grade will be dropped.*
- Three exams consisting of 2-4 problems will be given throughout the semester during class time. In the case of an excused absence, contact the instructor.
- The project will consist of a 3 minute presentation submitted online in April. It will cover a topic of interest in the field of electrical/computer engineering. Some possible areas are Computer Architecture, Networking, VLSI Systems, Analog/Digital/RF Circuits, Control Systems/Robotics, Digital Signal Processing/Machine Learning/Computer Vision, Nanoelectronics, Bioelectronics, Power Electronics/Systems.
- Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with [Disability Services for Students](#) at 1900 Student Health Center, Campus Box 7509, 515-7653. [NC State's policy on working with students with disabilities](#)
- All the provisions of the [code of academic integrity](#) apply to this course. In addition, it is my understanding and expectation that your signature on any test or assignment means that you neither gave nor received unauthorized aid.
- Please send email or use office hours if you are confused about anything...preferably sooner than later.

Health and Well-Being Resources

As a student you may experience a range of personal issues that can impede learning, such as strained relationships, increased anxiety, alcohol/drug concerns, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may impact your ability to participate in daily activities. It is very important that you have a support system and that you ask for help when you are struggling. The Counseling Center at NC State offers confidential mental health services for full time NC State students, including same-day emergency services.

These are difficult times, and academic and personal stress is a natural result. Everyone is encouraged to take care of themselves and their peers. If you need additional support, there are many resources on campus to help you:

- [Counseling Center](#)
- [Health Center](#)
- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the [NC State CARES team](#).
- If you or someone you know are experiencing food, housing or financial insecurity, please see the [Pack Essentials Program](#)