

EE 353

1) *Course number and name*

EE 353, Analog Electronics

2) *Credits, contact hours and category*

3 credits, 3 class hours, Engineering

3) *Instructor's or course coordinator's name*

Rene Arechiga

4) *Text book, title, author, and year*

Adel S. Sedra | Kenneth C. Smith | Tony Chan Carusone | Vincent Gaudet
Microelectronics Circuits, Eight edition, Oxford University Press. 2020

a. *Other supplemental materials*

- <https://nmt.instructure.com/login/canvas>

5) *Specific course information*

a. *Brief description of the content of the course (catalog description)*

- This course will cover topics including modern semiconductor devices such as BJTs and MOSFETs and teach how to use them in electronics circuits such as signal amplifiers and switches.

b. *Prerequisites or corequisites*

- EE 212 and 212L (Circuits and Signals II), Physics 1310 or 1320 (General Physics II).
- Co-Requisites: None

c. *Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program*

- Required

6) *Specific goals for the course*

a. *Specific outcomes of instruction*

- Learn about non-ideal properties of operational amplifiers and how to take those into account when analyzing and building circuits.
- Learn about non-linear circuit elements such as diodes, Bipolar Junction Transistors (BJTs), and Metal Oxide Semiconductor Field Effect Transistors (MOSFETs).
- Learn to model, analyze, and design circuits containing non-linear circuit elements.

b. *Student Outcomes addressed by the course.*

Student Outcome 1: an ability to identify, formulate, and solve engineering problems by applying principles of engineering science, and mathematics.

7) *Brief list of topics to be covered*

In this course we will explore modern semiconductor devices such as BJTs and MOSFETs and learn how to use them in electronics circuits including as signal amplifiers and switches. The specific topics that we will cover are

1. Amplifiers, models, circuits, data sheets.
2. Diodes, models, data sheets.
3. Zener diodes, and other types of diodes.
4. Bipolar junction transistors (BJTs)
5. Biasing BJTs
6. Designing amplifiers using BJTs
7. Field effect transistors (FETs)
8. Biasing FETs.
9. Designing amplifiers using FETs.

Homework will be assigned once per week. There will be a short quiz every other Friday. There will be two (or three) partial exams and a final.

Grade distribution proposed is as follows:

Homework: 20%
Quizzes: 10%
Mid-term exams: 40%
Final exam: 30%

Academic Honesty: New Mexico Tech's Academic Honesty Policy for undergraduate and graduate students is found in the student handbook, which can be found at:

<http://www.nmt.edu/student-handbook>. You are responsible for knowing, understanding, and following this policy.

Reasonable Accommodations:

New Mexico Tech is committed to protecting the rights of individuals with disabilities. Qualified individuals who require reasonable accommodations are invited to make their needs known to the Office of Counseling and Disability Services (OCDS) as soon as possible. To schedule an appointment, please call 835-6619.

Counseling Services:

New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. These confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

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COVID-19 Safety Issues for Face-to-Face Instruction: Students must follow campus-wide safety protocols, including mandatory use of face coverings and maintaining a minimum of 6 ft social distance from other students and faculty. Students should not enter the classroom earlier than 10 minutes prior to start of class, and should exit the classroom within 10 minutes of the end of class. Students who fail to comply are subject to disciplinary procedures. [*Only needed for F2F classes.*]

Title IX Reporting:

Sexual misconduct, sexual violence and other forms of sexual misconduct and gender-based discrimination are contrary to the University’s mission and core values, violate university policies, and may also violate state and federal law (Title IX). Faculty members are considered “Responsible Employees” and are required to report incidents of these prohibited behaviors. Any such reports should be directed to Tech’s Title IX Coordinator (Dr. Peter Phaiah, 20D Brown Hall, 575-835-5187, titleixcoordinator@nmt.edu). Please visit Tech’s Title IX Website (www.nmt.edu/titleix) for additional information and resources.