EE 3011 Signals and Linear Systems Fall, 2024

Location: WORKMAN 109
MWF, *9:00 – 9:50*

Instructor: Rene Arechiga

Workman 211 (575) 835 6881

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Office Hours: MTW 2:00 – 4:30 or by appointment

Course Description:
Signals and Linear Systems, 3 cr, 3 cl hrs
Normally offered fall semester

Fundamentals of continuous and discrete signals and systems. Topics include: linear time-invariant systems, convolution, Fourier series, Fourier transforms, Discrete Fourier Transform, Laplace transforms, Z-transforms, Sampling theory, Transfer functions, Poles and zeros, Feedback systems, Filters, application of MATLAB, and related topics.

Mode of Instruction: face-to-face.
Pre-requisites: EE 212, EE 271, and MATH 3035
Place in Curriculum: It's a required course for EE majors

Program Educational Objectives for Undergraduate Program in Electrical Engineering

The faculty of the Department of Electrical Engineering strives to continuously improve the undergraduate program in electrical engineering. The educational objectives reflect the needs of, and have been reviewed by, among others, the Advisory Board and faculty. Several years after graduation it is expected that the program's graduates will be:

- recognized leaders in electrical engineering-related fields or other career paths, in the public and private sector;
- valued leaders and participants in diverse teams who boldly discover and apply new knowledge and engineering practices;
- adaptive learners who continue to grow professionally in their organizations, or by earning post-graduate degrees.

Course Learning Outcomes:

- ABET Student Outcome 2 (M): an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Brief list of topics to be covered

1. Continuous-time signals
2. Continuous-time systems
3. Laplace transform
4. Fourier series
5. Fourier transform
6. Sampling theory
7. Discrete-time signals
8. Discrete-time systems

Course Requirements:

Text:

Title: SIGNALS & SYSTEMS
THEORY AND APPLICATIONS
PDF: free download umich.edu/publications/ee/
Authors: Fawwaz T. Ulaby and Andrew E. Yagle
Publisher: Michigan Publishing, 2018

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.

G**rade 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.

Respect Statement: New Mexico Tech supports freedom of expression within the parameters of a respectful learning environment. As stated in the New Mexico Tech Guide to Conduct and Citizenship: "New Mexico Tech's primary purpose is education, which includes teaching, research, discussion, learning, and service. An atmosphere of free and open inquiry is essential to the pursuit of education. Tech seeks to protect academic freedom and build on individual responsibility to create and maintain an academic atmosphere that is a purposeful, just, open, disciplined, and caring community."

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.