

EENG 2620 - Signals and Systems

Course Description:

Introduction to continuous-time signals and systems. Some elementary continuous-time signals in engineering applications. Characteristics and properties of continuous-time signals and systems. Introduction to impulse response and convolution for linear time-invariant systems. Analysis of system response for linear time-invariant systems using Laplace transform and transfer functions. Introduction to Fourier transform and its applications to system analysis. Introduction to control systems and PID controller.

Learning Objectives:

Students will

1. Identify and characterize continuous-time signals and systems using fundamental signal properties and system classifications.
2. Analyze elementary continuous-time signals commonly encountered in engineering applications.
3. Determine the properties of continuous-time systems, including linearity, time invariance, causality, and stability.
4. Analyze linear time-invariant (LTI) systems using impulse response and convolution to determine system outputs.
5. Apply the Laplace transform and transfer functions to analyze the behavior and response of continuous-time LTI systems.
6. Apply the Fourier transform to analyze signals and the frequency-domain characteristics of continuous-time systems.
7. Explain fundamental concepts of feedback control systems and analyze the basic roles of proportional, integral, and derivative (PID) control.

Lecture:

Time: Tu, Th, 10:40 AM - 12:00 PM

Location: NTDP B227

Instructor:

Dr. Yusheng Wei, Assistant Professor, Department of Electrical Engineering

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Office Hours: Tu 3:30 PM - 5:30 PM

Grader:

TBD

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Office Hours Location: NTDP B250

Textbook:

Signals and Systems, Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab, 2nd Edition, Prentice Hall

Dynamic Systems: Modeling, Simulation, and Control, Craig A. Kluever, 2015

Lecture notes and other supplementary materials are posted on Canvas.

Grading Policy:

Homework: 30%

Midterm Exam: 30% (in class)

Final Exam: 40% (in class)

General Policies:

- Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.
- ADA Accommodation Statement. UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodation at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.
- Emergency Notification & Procedures. UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.