EENG 2621 - Signals and Systems Lab

Course Description:

This course is designed to introduce students to the fundamental concepts of signals and systems, with a strong emphasis on practical applications using MATLAB. Students will gain hands-on experience in analyzing and processing signals in both continuous and discrete domains. The course covers a range of topics, including the basics of MATLAB programming, signal representation, system behavior, and the application of various transforms such as Fourier, Laplace, and Z-transforms. Through a series of laboratory exercises, students will learn how to model, analyze, and design systems that are critical in various fields of engineering, including communications, control systems, and digital signal processing.

Learning Objectives:

By the end of this course, students will be able to:

- MATLAB Proficiency: Develop a solid understanding of MATLAB and its application in signal processing, including basic operations, vector and matrix manipulation, and plotting.
- Signal and System Analysis: Analyze both continuous-time and discrete-time signals and systems using appropriate mathematical tools. Understand the concepts of linearity and time-invariance, and apply these to system modeling and analysis.
- Fourier and Laplace Transforms: Utilize Fourier and Laplace transforms to analyze and solve problems related to signal processing and system design. Understand their properties and applications in the frequency domain.
- Z-Transform Techniques: Apply Z-transform methods to the analysis and design of discrete-time systems, particularly in the context of digital signal processing.
- System Modeling: Model and simulate dynamic systems using differential and difference equations, and understand how to apply transform methods to solve these equations.
- Practical Application: Translate theoretical knowledge into practical skills through laboratory exercises, enhancing problem-solving abilities and technical proficiency in engineering applications.

Lectures:

Tu, 17:30 PM - 20:20 PM, NTDP B227.

Instructor:

Dr. Yusheng Wei.

Office: NTDP B261.

Email: yusheng.wei@unt.edu.

Office Hour: Tu 3:10 PM - 5:10 PM

Grader: TBD

Textbook:

Alex Palamides and Anastasia Veloni, *Signals and Systems Laboratory with MATLAB*, ISBN: 978-1-4398- 3055-0, CRC Press, Inc., 2011.

(Co-)Prerequisites:

EENG 2620 Signals and Systems or equivalent.

Grading Policy:

Projects and Reports (10): 100%

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 accommodations 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 Canvas for contingency plans for covering course materials.

• Attendance. Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.