ECE 0402: Signals, Systems & Probability

Spring 2026 Course Syllabus

Lectures: Wednesday 8:15–11:00 (Section 1) and 13:50–16:25 (Section 2) at S105

Instructor: Guanqiang "Tim" Zhou <guanqiang.zhou@scupi.cn>

Office Hours: Wednesday 11:30–13:30, Thursday 11:30–13:30 at N512 (or by appointment)

Homework Graders:

- Section 1: Yongyuan (Derrick) Hu <2023141520029@stu.scu.edu.cn>
- Section 2: Jiahao (Brian) Li <2023141520010@stu.scu.edu.cn>

Reference:

- *Signals and Systems*, 2nd edition, by Alan Oppenheim (**textbook**)
- *Signals and Systems Using MATLAB*, 4th edition, by Luis F. Chaparro
- *Linear Systems and Signals*, 2nd edition, by B. P. Lathi

Course Description

This course provides an introduction to the fundamental concepts of signals, systems, and probability theory. Topics covered include the analysis and representation of continuous-time signals, linear time-invariant (LTI) systems, Fourier and Laplace transforms, probability theory, and its applications to signal processing and system analysis. This course integrates concepts from mathematics, engineering, and computer science to provide students with the analytical tools needed to understand and design systems that process signals.

Course Objectives and Learning Outcomes

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

- Understand and manipulate continuous-time and discrete-time signals.
- Analyze the behavior of linear time-invariant (LTI) systems.
- Apply mathematical tools for signal and system analysis, such as Fourier transform and Laplace transform.
- Solve real-world problems using the principles of signals, systems, and probability.

Covered Topics (subject to change)

- Signals and basic operations
- System properties
- Linear time-invariant systems
- Convolution
- Fourier series
- Continuous-time Fourier transform
- Discrete-time Fourier transform
- Frequency response and filtering
- Sampling theorem
- Laplace transform
- Z-transform
- Discrete-time system analysis
- Introduction to probability theory

Course Grading

- Attendance and in-class quiz: 10%
- Homework: 10%
- Group project: 10%
- Midterm exam: 30%
- Final exam: 40%

Code of Academic Conduct

Maintaining academic integrity is essential in this course. All work submitted must be your own, whether individual or group assignments. Plagiarism, cheating, or any form of dishonesty will not be tolerated and will result in disciplinary action as per the institution's policies. You are encouraged to collaborate with classmates on understanding concepts, but all submitted work must reflect your independent effort. Properly cite any sources or assistance received and uphold the highest standards of academic honesty in all your work.