ECE 2026: Introduction to Signal Processing
Summer 2025:w (GT Metz)
Course Site: http://hasler.ece.gatech.edu/Courses/ECE2026/index.html
Time: T Th 10:25am – 12:20pm
Professor Jennifer Hasler, jennifer.hasler@ece.gatech.edu
Office Hours: T Th 9:30am-10:00am, T 11:55am-1:30pm, Th 11:55-12:30pm

Course Description: This course is a unique course originally developed at Georgia Institute of Technology (GT) in the 1990s as the foundational course of the new computer engineering department.
   This course will continue along this tradition, with a focus primary, although not exclusively, on discrete-time signal processing. Some aspects of continuous-time signal processing are essential for understanding the discrete-time approaches (e.g. sampling), as well as they will be beneficial to other courses (e.g. Linear Circuits, ECE 2040).

Course Objectives: To investigate signal processing (sampling, filtering, Fourier and Z transforms) with an emphasis on discrete-time systems.

Textbook: McClellan, Schafer, Yoder, *Signal Processing First* , Prentice Hall
You will need to have MATLAB, as the projects require using MATLAB. Depending on the particular school licences at a given time (these issues have shifted drastically over many years), you may or may not need the MATLAB student version ((https://www.mathworks.com/products/matlab/student.html)

Prerequisites: Second Semester in Calculus (e.g. MATH 1502) and one semester of programming (e.g. CS 1301 or 1371).

Course Material Overview: The class is divided into three exams, nine MATLAB based projects, and 11 Homework assignments. In addition, there will be one final project at the end of the semester (no final exam).

This course will have a particular structure:
   Video watching: Videos are expected to be watched before monday morning class.
   Tuesday Sessions: In class faculty led recitation (by Dr. Hasler).
   Thursday Sessions: In class faculty led recitation, with time on the MATLAB based project.

Your grade will be determined as the average of two exams, MATLAB-based projects, a final exam, and homework.

Exams	Final Project	Projects	Homework
50%	25%	15%	10%

Grades will be assigned on a curve; however, I will guarantee the following grades if you reach the following percentages: 89% for an A, 79% for a B, 60% for a C, and 50% for a D. Rarely does the line for a C or D move as a result of a curve; the curve for an A and B vary significantly between classes.

Homework: Each of the 8 homework assignments are equally weighted. Homework will be graded in a near binary sense if the question has had a full and complete attempt at solving the problem. It is understood the first time working through problems might have some initial mistakes. The homework

problems will be assigned from the textbook. If you have an earlier version of the book, many of the problems are identical. A few problems will be assigned, although you are strongly encouraged to work additional problems to get mastery of the material. Homework (paper) is handed in during class on Mondays.

Projects: Each of the 6 projects are equally weighted. Matlab-Based Project assignments (9 this semester) will require solving a few computer problems often involving sound or image processing. Projects are due on *Thursdays, submitted electronically by 11:59pm Metz time*. Projects handed in after this deadline will not be accepted. This policy is firm, so do not fall behind! The work load will not get any lighter later in the semester. Extensions on due dates will not be granted unless there is a very compelling reason (e.g., a medical problem). To get an extension, you must talk with me **before** the due date. Project signoffs must be done by Wednesday, the day before the project is due, during normal business hours. We will work as individuals for each of these projects. Make sure **your name** is on the submission so I know who to give credit for the report; although the project will be submitted electronically, don't assume the submission system will retain any of this information.

Exams: We will have two exams in this course. The exams will be equally weighted. The exams will be closed book. You are allowed one sheet of handwritten notes, and the handwritten notes from the previous exams. The exam might not look at all like previous book problems. *Expect the unexpected.*

Final Exam: The final exam will be closed book. You are allowed one sheet of handwritten notes, and the handwritten notes from the previous exams. The exam might not look at all like previous book problems. *Expect the unexpected.*

MATLAB: We will use the computer program MATLAB for all of the projects. Your projects will require a simple understanding of MATLAB. We will use only a small fraction of MATLAB's capability in this class, and any version that solves the project is acceptable. There is no need to show any MATLAB code unless the project explicitly asks for it. Therefore, do not include MATLAB or other code unless it is requested or absolutely necessary.

Honor Code: You are expected to uphold the honor code All violations will be referred to the Dean of Students for investigation and penalties. Although you are encouraged to work together to learn the course material, all work is expected to be completed individually. There will be no collaboration for the homework. All conduct in this course will be governed by the Georgia Tech honor code.