ECE 6550: Linear Systems and Control
Fall 2022 (GT Metz)
Course Site: http://hasler.ece.gatech.edu/Courses/ECE6550/index.html
Time: M W 11:00am – 12:15pm
Professor Jennifer Hasler, jennifer.hasler@ece.gatech.edu
Office Hours: M W 9:15am – 11:00am

Course Description: Introduction to linear system theory and feedback control. Topics include state space representation, controllability and observability, linear feedback control.

Course Objectives:
- Students will demonstrate expertise to solve linear, time-invariant differential equations, model physical systems by the state-space approach, as well as analyze reachability, controllability and observability of linear systems.
- Students will demonstrate the ability to design feedback controllers for closed-loop stability and eigenvalue assignment, and design Luenberger observers for output feedback.

Textbook: J.P. Hespanha, Linear Systems Theory (2nd edition), Princeton University Press, 2017. ISBN 9780691179575

Prerequisites: It is expected that students entering this class will have some basic understanding of linear algebra, control theory, and differential equations. It is assumed that students have a basic understanding of undergraduate ECE material (e.g. circuits).

Office Hours: M W 9:15am - 11:00am

Course Material Overview: The class is divided into three exams, and 12 Homework assignments. In addition, there will be one final project at the end of the semester (no final exam). Your grade will be determined as the average of three exams, MATLAB-based projects, a final project, and homework.

Exams	Final Project	Homework
60%	25%	15%

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.

Exams: We will have three 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 Project We will have a final project built on the entire experiences in this course instead of a final exam focused towards a practical problem (e.g. circuit example).   The final project is due December 13 (11:59pm Metz Time).

Homework: Each of the 12 homework assigments 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. Homework (paper) is handed in during class on Mondays.

Honor Code: 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.