ECE6550 Linear Systems and Controls
(Sections A and Q)

Course Information

Instructor:	Prof. Sam Coogan
Course Description:	Introduction to linear system theory and feedback control. Topics include state space representations, controllability and observability, and linear feedback control.
Textbook:	J. Hespanha, *Linear Systems Theory*, Princeton University Press, 2009 (ISBN: 0691179573).
Class Time:	Tuesday/Thursday, 9:30 AM–10:45 AM, Instructional Center Room 209 (Aug. 24 – Dec. 17, 2026)
Sections:	This course is offered simultaneously as Section A (in-person) and Section Q (distance learning). Both sections follow the same curriculum and complete the same assignments. See the course Canvas page for details specific to Section Q.

Course Learning Outcomes

Upon successful completion of this course, students should be able to:

- Solve linear, time-invariant differential equations.
- Model physical systems using the state-space approach.
- Analyze reachability, controllability, and observability of linear systems.
- Design feedback controllers for closed-loop stability and eigenvalue assignment.
- Design Luenberger observers for output feedback control.

Grading and Assignments

Grading Policy

Grade Weights: Homework: 30%

Midterm: 30%

Final: 40%

Final letter grades are assigned as follows:

Grade	A	B	C	D	F
Percentage	$\geq 90\%$	$\geq 80\%$	$\geq 70\%$	$\geq 60\%$	$< 60\%$

Grade cutoffs are subject to adjustment at the discretion of the instructor, but only in the direction of the students' favor.

Attendance Policy

Attendance is expected. You will not be penalized for excused absences; however, it is your responsibility to notify the instructor in advance when possible and to make up any missed work.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Late homework will be penalized accordingly. Make-up exams are given for illness, approved Institute activities, or religious observances.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit `www.catalog.gatech.edu/policies/honor-code/`. Academic dishonesty includes copying all or part of another person's work, using material not specifically allowed (such as a solutions manual), or helping someone else commit an act of academic dishonesty. All incidents of academic dishonesty will be referred to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. Redistributing course materials or using external sites for assistance (e.g., CourseHero, Chegg, or similar) is prohibited.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. The Student-Faculty Expectations Agreement articulates some basic expectations that you can have of me and that I have of you. See `www.catalog.gatech.edu/rules/22/` for details.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or `disabilityservices.gatech.edu` as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.