ME6402, Spring 2025
Nonlinear Control Systems

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Course Overview

Course Description:

- Analysis of nonlinear systems, geometric control, variable structure control, adaptive control, optimal control, applications.

Scope and Goals:

- To be familiar with the theory and applications of nonlinear systems (phase plane, describing functions, Lyapunov methods), geometric control, variable structure control, adaptive control, applications to robots and spacecraft, and nonlinear optimal control.

Course Logistics

Grading Breakdown

- Homework Assignments (6) - 30%
- Midterm Exam - 30%
- Final Exam - 40%

Important Dates

- Midterm: February 25 (in-class, timed take-home for DL students)
- Final: April 29 (in-class, timed take-home for DL)

Homework Submission

- Due at 11:59 PM on the due date (Fridays)
- Submit via Gradescope
- You are given 3 "free" late days (can be broken up or used together)
- Homework may be submitted up to 72 hours late, without request, for a 20% penalty per 24 hours.
- Solutions will be posted 72 hours after homework is due. After the solutions are posted, no homework submissions will be accepted
- If you have any unusual circumstances, please contact me before the solutions are posted

Assignment Policy

Honor Code

- All homework assignments are individual, but light collaboration is permitted and encouraged
- Abide by the Georgia Tech honor code
- Never directly copy other sources or other student assignments
- Please do not upload course material on other websites

Assignment Policy

AI Policy

- You are allowed to use AI (GitHub Copilot, ChatGPT) for help with coding.
- HOWEVER, you should never directly copy-paste AI-generated text with anything you submit (use your best judgment when it comes to code).
- Please be aware that AI often produces errors and broken code.

Communication Policy

Office Hours

- I will be available for a short period after class for small questions, but the best way to reach me is during office hours.
- Tuesday 4-5pm, Friday 10-11am (subject to change)
- Office hours will be on zoom, but you're welcome to also come in person to my office (TSRB 442)

Communication Policy

Contact Information

- I would prefer for you to either ask questions in class or post questions to a discussion on Canvas since other students may benefit from the answer.
- If you email me, please include "ME 6402" in the subject.
- Email: mtucker@gatech.edu

General Guidelines

- Email the Dean of Students if your personal situation requires special academic consideration

Course Feedback

I value your feedback! Please let me know if you have any suggestions or concerns about the course. The link below will remain active throughout the entire semester.

- https://forms.gle/iSYBqWWKH94zr2E5A