

Spring 2024

ME 655-002: Modern Control Methods

Zhiming Ji

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Instructor: Dr. Zhiming Ji	Office: MEC 318	Phone/Email: 973-596-3341/ji@njit.edu
Class Room: KUPF 117	Class Time: T11:30-2:20pm	Office Hours: T2:30-4:30pm & appointment

Required Background: Dynamic system modeling and analysis, Laplace transforms, block diagrams, and transfer functions.

Textbook: Modern Control Systems (13th Ed.), by Richard C. Dorf and Robert H. Bishop, Pearson, 2016, ISBN 0134407628. [Several "US" and "International" editions exist and the problems differ among them. You may use a different edition, but you will have to obtain the correct problems from the edition with this ISBN].

Software: MATLAB with Control Toolbox

Grading: Homework 30%, midterm exam 35%, final exam 35%

Make-Up Exams: If you have a reason for missing an exam, you must contact the office of the Dean of Students. A make-up exam will be arranged after receiving a notice from the Dean of Students office.

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COURSE OUTLINE:

Week (date)	Topic	Reading Assignment
1 (1/16)	Review: System Dynamics and Modeling	Chap. 1
2 (1/23)	MATLAB & Control Toolbox	Chap. 2
3 (1/30)	Block Diagrams & Signal Flow Graph	Chap. 2
4 (2/6)	State Variable Models	Chap. 3
5 (2/13)	Control System Characteristics	Chap. 4
6 (2/20)	Measures of Performance	Chap. 5
7 (2/27)	Stability, Root Locus Method	Chap. 6, 7
8 (3/5)	Midterm	
9 (3/19)	Root Locus Method	Chap. 7
10 (3/26)	Frequency Response & Bode Diagram	Chap. 8
11 (4/2)	Bode Diagram	Chap. 8, 9
12 (4/9)	Stability: Nyquist Criterion	Chap. 9
13 (4/16)	Nichols Chart	Chap. 9
14 (4/23)	Review, Compensator, Controllability & Observability	
15 (5/?)	Final Exam	

Note: Tuesday, April 30, follows Friday Schedule.