

Spring 2021

ME 655-102: Modern Control Methods

Zhiming Ji

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Ji, Zhiming, "ME 655-102: Modern Control Methods" (2021). *Mechanical and Industrial Engineering Syllabi*. 376.

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Instructor: Dr. Zhiming Ji	Email: ji@njit.edu	Office: Webex Room / MEC 318
Class Room: Webex+TIER 105	Class Time: R6:00-8:50pm	Office Hours: T5:30-6:00pm, W4:30-6:00pm

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 25%, midterm exam 30%, special problems 10%, 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 (1/21)	Review: System Dynamics and Modeling	Chap. 1
2 (1/28)	MATLAB & Control Toolbox	Chap. 2
3 (2/4)	Transfer Functions & Signal Flow Graph	Chap. 2
4 (2/11)	State Variable Models	Chap. 3
5 (2/18)	Control System Characteristics	Chap. 4
6 (2/25)	Measures of Performance	Chap. 5
7 (3/4)	Stability, Root Locus Method	Chap. 6, 7
8 (3/11)	Midterm	
9 (3/25)	Root Locus Method	Chap. 7
10 (4/1)	Bode Diagrams	Chap. 8
11 (4/8)	Bode Diagrams & Nyquist Criterion	Chap. 8, 9
12 (4/15)	Nichols Chart, Special problems assigned	Chap. 9
13 (4/22)	Nichols Chart	Chap. 9
14 (4/29)	review, Special problems due	
15 (5/13)	Final Exam	