MECH 3345- System Dynamics
Spring 2023

Time and Location: MW 9:00 – 10:20, UGLC 342

Instructor: Hossein Mallahzadeh, Ph.D

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Office hours: T 1:00 – 2:00 PM, W 1:00- 2:00 PM

Office location: Engineering Bldg., E-329

Reference Textbooks:

Palm, W. J. System dynamics. McGraw-Hill Higher Education. 3rd Edition.

Blackboard: The instructor will use Blackboard for uploading lectures, updating the syllabus (if necessary), and communicating with students via "Announcements" and email.

Required Material/Software: MATLAB

Prerequisites: Electromechanical systems and Dynamics

Course Description: The course educates students in system modelling, time-domain performance analysis, and frequency-domain analysis.

COURSE OBJECTIVES:

1. Students will use mathematical tools and physical laws to represent mechanical and electromechanical systems.

2. Students will use computer tools to validate and analyze dynamical systems.

TOPICS COVERED

1. Dynamic response and Laplace transform method
2. Transfer function
3. Rigid-body mechanical systems
4. Spring damper mechanical systems
5. Electrical Systems
6. Electromechanical systems

7. State space representation

8. System analysis in time domain

9. System analysis in frequency domain

Exam dates: February 15th, March**22nd**, April 19th.

Grading

Your final grade for this course will be based on the following activities

Assignments	Percentage
Midterm Exams (3x)	75%
Quiz	10%
Class Performances	15%
Total	100%

Grade Scale	
100-90%	**A**
89-80%	**B**
79-70%	**C**
69-60%	**D**
<60%	**F**

The instructor reserves the right to revise this grading plan.

NO extensions are given in homework or quizzes.

Exams: Under any circumstances makeup exams are not given. **Electronic devices (e.g. laptops, tablets, cell phones, etc.) are not permitted**, only calculators. **NO** formula sheets are allowed, **NO** headphones or earphones. Be sure to use the bathroom before the exam, you will **NOT** be permitted to leave during the exam. Show your student ID on top of your desk.

The instructor preserves the right to ask for explanation of the student's exam answers.