## **EEM 342: Fundamentals of Control Systems**

## 2023-2024 Spring Semester Syllabus

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General Information: click here

Laboratory Information for Part II: click here

Laboratory Sheets for Session 5: Pre-lab Sheet; In-lab Sheet

(New) Laboratory Sheets for Session 6: <u>Pre-lab Sheet</u>; <u>In-lab Sheet</u>

Laboratory Grades: click here (will be updated as new grades become available)

MATLAB Information: click here

Text Book: Any introductory book on control systems, such as:

R.C. Dorf and R.H. Bishop, *Modern Control Systems*, Addison-Wesley (<u>click for note</u>).
K. Ogata, *Modern Control Engineering*, Prentice Hall.

3) J.J. D'Azzo and C.H. Houpis, *Linear Control System Analysis and Design*, McGraw-Hill.

Main Course Material: Weekly Notes (links given under Course Outline)

**Grading:** Midterm exams (2x20%); Laboratory (20%); Final exam (40%).

## Tentative Course Outline:

Week 1: Introduction (see <u>Notes for week 1</u>)

Week 2: Input-Output Modeling (see Notes for week 2; also see this)

Week 3: Internal Modeling (see Notes for week 3)

Week 4: Block Diagrams (see Notes for week 4)

Week 5: Realizations (see Notes for week 5)

Week 6: 1<sup>st</sup> Midterm Exam (click for solutions)

Week 7: Stability (see Notes for week 7)

Week 8: Eid Holiday

Week 9: Stabilizing Controller Design (see Notes for week 9)

Week 10: Steady-state Response (see Notes for week 10; also see this for MIMO generalization)

Week 11: Transient Response and Frequency Response (see Notes for week 11)

Week 12: Root-Locus Method (see Notes for week 12)

Week 13: 2<sup>nd</sup> Midterm Exam (click for information and rules)

Week 14: Discrete-time Systems (see Notes for week 14)

Week 15: Sampled-data Control Systems (see Notes for week 15)