

ME/IE 312 – Dynamic Systems and Control, Fall 2008

Catalog Data: 312 Dynamic Systems and Controls U 3

Dynamics of linear systems. Modeling of mechanical, electrical, fluid, and thermal systems. Analysis and design of feedback control systems. Analytical, computer and experimental solution methods. Time and frequency domain techniques.

Required for BSME major.

Instructor: Thomas J. Royston, Professor, Mechanical & Industrial Engineering, troyston@uic.edu

TA: Kaya Yasar (tyasar2@uic.edu, tel: 413-0470, Office hours: Tuesday 2 – 4 PM)

Time & Place: MWF 12 – 12:50 PM, 1003 ERF

Textbook: *System Dynamics*, by K. Ogata, Prentice Hall, Fourth Edition, 2004.
ISBN: 0-13-142462-9

Call #: 22457 (ME), 22491 (IE)

Prerequisites: Math 220, Introduction to Differential Equations
Physics 142, General Physics II

Prerequisite for: ME 411, Mechatronics; ME 412, Dynamic Systems Analysis;

Topics Covered (with approximate lecture hours of coverage):

- CH 1: Introduction to course. (0.5 hours)
- CH 2: The Laplace Transform (4.5 hours)
- CH 3: Mechanical systems (4 hours)
- CH 4: Transfer function approach to modeling dynamic systems (2 hours)
- CH 6: Electrical systems and electromechanical systems (6 hours)
- CH 7: Fluid systems & thermal systems (4 hours)
- CH 10: Time Domain Analysis and Design of Control Systems (9 hours)
- CH 11: Frequency Domain Analysis and Design of Control Systems (8 hours)

(38 hrs shown + 5 hrs review & exams = 43 hours. ...2 holidays leaves 43 hrs in semester)

Grading:

Homework - <i>assigned in class - due week later beginning of class</i>	25 %
Exam #1 - Week 7, <i>Wednesday, October 8</i> - on material covered through Week 6	20 %
Exam #2 - Week 13, <i>Wednesday, November 19</i> - on material covered through Week 12	20 %
Final Exam – Cumulative	35 %

Fall Semester 2008

August 25, M	Instruction begins.
September 1, M	Labor Day holiday. No classes.
September 5, F	Last day to complete late registration; last day to add a course(s) or make section changes; last day to drop individual courses without receiving W (withdrawn) grade on academic record via <i>Student Self Service</i> .
October 3, F	Last day for undergraduate students to use optional late drop in college office and receive grade of W on academic record.
November 27–28, Th–F	Thanksgiving holiday. No classes.
December 5, F	Instruction ends.
December 8–12, M–F	Final examinations.

Type of Instruction: Lecture-Discussion, 3 contact hours per week.

Relationship of course to program outcomes

- a. Ability to apply knowledge of mathematics, science and engineering
- c. Ability to design a system, component, or process to meet desired needs
- e. Ability to identify, formulate and solve engineering problems
- k. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Person(s) who prepared this description and date of preparation

Thomas J. Royston, Professor of Mechanical Engineering, January 2, 2007