Course Organization/Course Outline

Instructor: C.V. Hollot

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Office Hours: open-door policy, by appointment


Course Website: https://spark.oit.umass.edu

Grading:
- Class attendance (20%)
- Field trip attendance (5%)
- 3 exams (25% each)

Team Homework: There will be approximately 8 homework assignments.
- It is expected that each student completes each assigned homework problem.
- Homework is not graded.
- Completing homework is necessary for exam success.
- Each homework team is responsible for presenting in-class solution to at least one homework problem per assignment (individual problems will be assigned to teams)

Field Trip: A field trip to the UMass Central Heating Plant (chock-full of servo systems).
OUTLINE

1. System response
   a) Laplace Transforms
   b) Time Response
   c) Stability
   d) Frequency response
   Review FPE Chapters 1-3 (3)*

2. Basic Properties of Feedback Control
   a) The Basic Equations of Control
   b) Control of Steady-State Error
   c) Control of Dynamic Error: PID Control
   FPE Chapter 4 (7)

3. Frequency Response Analysis
   a) Bode diagrams
   b) Nyquist diagrams
   c) Stability margins
   FPE Chapter 6.1-6.4 (6)

4. Design control systems
   a) Design objectives
   b) Compensation techniques
   c) Computer implementation
   FPE Chapter 6.6, 8.1-8.3 (8)

5. Exams
   (2)

* Number of 75 min. lectures.

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ECE Minimum Grade Requirement

Part 1 - Minimum Grades for Admission to the CSE or EE Major In order to be admitted to either the Computer Systems Engineering major (CSE) or the Electrical Engineering major (EE) one must earn grades of C or better in each of the following courses: MATH 131, MATH 132, ENGIN 112 (see Note 1), E&C-ENG 122 (see Note 1) (or CMPSCI 121), PHYSICS 151 and ENGLWRIT 112. (Students planning to apply for admission to EE or CSE should take ENGIN 112, MATH 131 and PHYSICS 151 in the first semester and E&C-ENG 122 (or CMPSCI 121), MATH 132 and PHYSICS 152 in the second semester.)

Part 2 - Minimum Grades for Junior Eligibility In order to be eligible to take any 300-level E&C-ENG courses one must be an Electrical Engineering (EE) or Computer Systems Engineering (CSE) major and have earned a grade of C or better in E&C-ENG 211, 212, 232 and 242. The one exception is if the grade point average in the set consisting of E&C-ENG 211, 212, 232 and 242 is 3.100 or higher.

Part 3 - Minimum Major GPA at Graduation According to university regulations, it is a graduation requirement that a student’s major GPA be 2.00 or higher. Each department determines which courses are included in the major GPA. The ECE department includes the technical courses (math, science, engineering and computer science) at the 200-level and above in the calculation of the major GPA.

Note 1. For the purpose of admission to the major, ENGIN 110, 111 and 113 are all acceptable substitutes for ENGIN 112 but for the purpose of graduation, ENGIN 112 is a required course. Furthermore, ENGIN 112 is a prerequisite for ECE 232. For the purpose of admission to the major, CHEM-ENG 120, CE-ENGIN 121 and M&I-ENG 124 are all acceptable substitutes for E&C-ENG 122 (or CMPSCI 121) but for the purpose of graduation, E&C-ENG 122 (or CMPSCI 121) is a required course. Furthermore, E&C-ENG 122 (or CMPSCI 121) is a prerequisite for E&C-ENG 242.