ECE 382: Feedback Systems Analysis and Design
Spring 2007

Time and Room: MWF 3:30-4:20pm, UNIV 317
Instructor: Xiaojun Lin. Office: MSEE 340. Email: linx@ecn.purdue.edu
Office hours: W 10:30am-12:30pm (or send e-mail for appointments).
TA: Dongchun Zhu Office: Potter 370 Email: zhu21@purdue.edu
Office hours: T 2:45-5:45pm, Th 12:30-1:30pm, 2:45-5:45pm

Course Materials:
- Class Notes: to be distributed occasionally during the semester.

Prerequisite:
- Calculus, Ordinary Differential Equations, elementary complex variables;
- Laplace Transforms (at the level of ECE 202). Some basic facts will be reviewed in class.
- ECE301 or equivalent;
- Access to MATLAB (a student edition is sufficient), Version 5 or higher.

Homework: Assigned approximately each week, which may involve some MATLAB programming. All homework will count towards your final grade.
- Homework will be collected at the beginning of the class in which they are due. Late homework will not be accepted.
- All necessary steps towards obtaining the solution, including the MATLAB code if necessary, must be included in the writeup for full credit.
- The homework is a very important part of the course. You may read your lecture notes and the text, and think that you understand the material. However, when you attempt to work the homework problems, you will frequently find that you actually did not understand the material as well as you thought you did. Also, the problems on the exams will be similar to the homework problems.
- You may discuss the homework with other students. However, your submitted homework must be your own work, and you are strongly advised to solve independently as much of the homework as you possibly can. This will serve you well come exam time.
Assembling your homework: The grader will have to handle a lot of paperwork for the course, and wade through many pages of handwritten solutions. It will be to your benefit in terms of maximizing your grades, and will be greatly appreciated by us if you adhere to the following three simple rules when preparing your assignments:

- Put the problems in the proper order.
- Staple the pages together before turning in the assignment.
- Write your name and 10-digit PUID on the upper-right hand side on the first page.

Exams: There will be two midterms and one final exam. The time and location for the midterms are as follows:

- Midterm 1: 8:30-10:00pm Mon. Feb. 26th, RAWL 1086
- Midterm 2: 8:30-10:00pm Wed. Mar. 28th, RAWL 1086

Please schedule your plant trips and interviews so that they do not conflict with these dates. **You will not be allowed to make up the exam if you missed it.**

Regrades policy: All requests for regrades must be submitted in writing within one week from the date the exam is returned. If you desire a regrade on an exam, please attach a note to your paper stating which problems and discrepancies you found and submit the paper to the TA. Be sure to look at the solutions before asking for a regrade.

Final Grade: Out of the total score of 550, each midterm will count 150 points; the final will count 200 points; and the homeworks will count 50 points.

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Academic Dishonesty

The ECE faculty expects every member of the Purdue community to practice honorable and ethical behavior both inside and outside the classroom. Any actions that might unfairly improve a student’s score on homework and examinations will be considered cheating and will not be tolerated. Examples of cheating include (but are not limited to):

- Sharing results or other information during an examination.
- Bringing forbidden material or devices to an examination.
- Working on an exam before or after the official time allowed.
- Requesting a re-grade of answers or work that has been altered.
- Representing as your own work anything that is the result of the work of someone else.

At the professor’s discretion, cheating on an assignment or examination will result in a *failing grade for the entire course*, or a reduced grade, or a zero score for the particular assignment, or exam. All occurrences of academic dishonesty will be reported to the Assistant Dean of Students and copied to the ECE Assistant Head for Education. If there is any question as to whether a given action might be construed as cheating, please see the professor or the TA before you engage in any such action.
Major course structure:

- Mathematical modeling of control systems
- Time domain analysis
- Frequency domain analysis
- Compensator design

Course objectives:

After completion of this course the student should be able to construct a block diagram, signal flow graph and mathematical model for a lumped parameter physical system consisting of some common mechanical and electrical components. The student should be able to perform sensitivity and stability analyses of such systems, to design cascade and feedforward compensators for such systems to meet standard specifications on the transient and frequency response and to use the digital computer to check if the specifications are met.

For up-to-date information about the course, consult the web page

http://min.ecn.purdue.edu/~linx/ECE382/