

ECE382 Feedback System Analysis and Design / ME482 Control System Analysis and Design (Spring 2004)

Course Information

Lecture: SL 108 MW 1:00 – 2:15 pm

Instructor: Sarah Koskie

Office Hours: MW 2:30 – 4pm, or by appointment, in SL 164F

Email: skoskie@iupui.edu

Text: R. C. Dorf & R. H. Bishop, *Modern Control Systems*, Ninth edition, Prentice-Hall, 2001.
ISBN: 0-13-030660-6.

Grading:	Homework	20%
	Midterm Exams	60% (20% each)
	Final Exam (covering Chs. 10-12 only)	20%

Tentative Lecture Schedule

Lecture(s)	Topic	Reading Assignment †
	Review	Appendices A, C, E, and G
1	Introduction and Overview	Chapter 1
2-4	Mathematical Models	Chapter 2
5-7	State Variable Models	Chapter 3
8	First Midterm (tentatively Monday, February 9)	Chapters 1-3
9-10	Feedback Control System Characteristics	Chapter 4
11-12	Performance Analysis	Chapter 5
13-14	Stability Analysis	Chapter 6
15	Second Midterm (tentatively Wednesday, March 3)	Chapters 4-6
16-18	Root Locus Method	Chapter 7
19-20	Basic Frequency Response Methods	Chapter 8
21-22	Stability in the Frequency Domain	Chapter 9
23	Third Midterm (tentatively Wednesday, April 7)	Chapters 7-9
24-27	Controller Design Methods	Chapter 10
28-29	State Space Analysis and Design	Chapter 11
30	Robustness	Chapter 12

†Readings are from the text by Dorf & Bishop.

Homework Assignments

Homework assignments will be chosen from the text by Dorf and Bishop. Each homework is due in class on the assigned date, which will be announced in class and posted to the course website.

- Late homework will NOT be accepted.
- Work submitted should be the student's own.
- All necessary steps towards obtaining the solution, as well as any MATLAB code, must be included in the writeup for full credit.

There will be approximately ten homework assignments during the course of the semester. Each student's lowest two scores will be dropped. The problems will generally be drawn from the "Design Problems" and "MATLAB Problems" sections following each chapter. Students should keep returned homework as results of some problems may be used in later homework assignments.

Using the Textbook Website

Students should take the initiative to do additional problems from the "Exercises" and "Problems" sections to make sure that they not only understand the material of each chapter, but can use the material successfully. They should also visit the web site for the textbook and be sure that they can successfully answer all of the "Multiple Choice", "True or False", and "Matching Terms & Concepts" questions posted for each chapter.

To access these questions on the web site for the text, go to

<http://cwx.prenhall.com/bookbind/pubbooks/dorf/>

and at the bottom of the page, select the appropriate chapter. Select "Multiple Choice", "True or False", or "Matching Terms & Concepts" from the options on the left, and after filling in the answers, click "Submit for Grade". Please *do not* email me your results *unless* specifically requested to do so as part of a homework assignment.

The missing appendices for the textbook are accessed by selecting "Book Resources" instead of a particular chapter. In addition to the Appendices, MATLAB and Simulink code for examples from the text is available here.

Finally, do not forget to visit the "Errata" listings so that you do not waste time trying to figure out something in the text that doesn't make sense because it is, in fact, false. If you find additional errors in the text that are not listed, please let me know so that I can post them on the course web page to let the rest of the class know.