

**ME 455**  
**AUTOMATIC CONTROL SYSTEMS**  
**Spring 2008**

**Instructor:** Dr. A. Scott Lewis      211 Applied Research Lab      5-0962  
(Beside Eric Walker Building)  
E-Mail: [asl103@psu.edu](mailto:asl103@psu.edu)

**Teaching Assistant:** None

**Office Hours:** By appointment

**Class Location and Time:** 120 EES, 9:45-11:00 T, TH

**Text:** Automatic Control Systems, Eighth Edition, Benjamin C. Kuo and M. Farid Golnaraghi, 2003

**References:** (On reserve in Hammond Library)

Franklin, G.F., Powell, J.D., and Emami-Naemi, A., Feedback Control of Dynamic Systems, Third, Fourth and Fifth editions.

**Prerequisites:** ME 320, ME 450

<b>Grading:</b>	Tests (2)	45%
	Homeworks/Projects	30%
	Final (comprehensive)	25%

**Class Policy:**

This class deals with the design and analysis of automatic control systems. Important background for this course includes dynamic modeling, differential equations, difference equations, LaPlace transforms, z-transforms, matrices, and transfer functions. Topics of interest include stability analysis, time domain and frequency domain analyses. The attached schedule provides more details of the topics to be covered.

An important part of learning how to solve engineering problems is homework assignments. While students are encouraged to work together on the homework assignments, it is assumed that each student will hand in solutions that are largely the results of his/her own efforts. A good indicator of whether or not the solution represents your own work is to ask yourself if you fully understand every step of the solution. Homework assignments will be handed out regularly and are to be handed in at the **BEGINNING** of class on the date set during class. **NO LATE HOMEWORK OR PROJECTS WILL BE ACCEPTED!** Although I do not require a certain type of paper and rigid format requirements for the homework, I do expect it to be neat and your answers clearly indicated.

Academic dishonesty, including but not limited to copying from other students during exams and quizzes, photocopying of computer projects and copying computer data files, will not be tolerated and will be prosecuted vigorously through the university judicial system.

The schedule that follows is to be used as a guideline. There might be some deviation and it is the student's responsibility to be aware of any changes that are announced in class.

## TENTATIVE SCHEDULE

Week	Date	Text Chapter	Material
1	1/15, 1/17	1	Introduction to control systems
2	1/22, 1/24	2.3, 2.4, 2.5, 2.6	State Equations & Review of Laplace transform
3	1/29, 1/31	3.2, 3.3	Transfer functions, Block diagrams
4	2/5, 2/7	2.10, 2.11, 2.12	Digital system and Z-transform
5	2/12, 2/14	7, 6.3 ~ 6.5	Time-Domain analysis of control systems
6	2/19, 2/21		"
7	2/26, 2/28	8	Root locus technique
8	3/11, 3/13	SPRING BREAK	
9	3/18, 3/20		"
10	3/25, 3/27	9	Frequency-domain analysis of control systems
11	4/1, 4/3		"
12	4/8, 4/10		"
13	4/15, 4/17	10	Design of control systems
14	4/22, 4/24		
15	4/29, 5/1		
16	Finals Week		FINAL