EE128/ME134 Feedback Control Systems, Fall 2010

Instructor: Prof. Ronald Fearing
Office Hours (725 Sutardja Dai Hall) Tues 3-4 pm, Wed 1-2 pm, or email ronf@eecs for appointment.

Teaching Assistants:
Jansen Sheng, jsheng87@eecs.berkeley.edu , OH: tba 204 Cory
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Course web page: http://www-inst.eecs.berkeley.edu/~ee128/

Text: G.F. Franklin, J.D. Powell, and A. Emami-Naeini, *Feedback Control of Dynamic Systems,* 6th or 5th edition. Recommended : **MATLAB & Simulink Student Version 2010a**

Grading: Homework: 10%, Lab 25%, Midterm 25%, Final 40%.

Homework: Homework is due 10 am in the homework box in 240 Cory, usually on Thurs. No late homework will be accepted. The lowest HW grade will be dropped. Up to 2 people may turn in a single homework writeup with both names listed.

Labs: Scheduled labs will be held in 204 Cory. Prelab is done individually and is due at the beginning of your assigned lab period. Groups of 3 students will work together and submit a single final writeup. The previous week's lab writeup will be due at the beginning of the assigned lab period. For the first lab assignments you will be assigned a group within your assigned lab section.

Section 101: F 9-12, Jansen Sheng
Section 102: Th 3-6 pm, Wenjie Chen
Section 103: Wed time tba,
Section 104: Tue time tba

Honest and ethical conduct. All work submitted to the class must be your own or attributed. The penalty for unethical conduct on exams will a grade of F or NP and a letter will be written to the campus Office of Student Conduct. The penalty for unethical conduct on homework or labs will be a -100% grade on that assignment.

EE128/ME134 Course Schedule (draft 8/2/2010)

Week	Date	Lecture	Reading	Lab
1	8/26	Overview, Intro to Feedback Control, Dynamic Models	2	
2	8/31	Laplace, LTI properties, Diff. equ. in state variable form	3.1-3.2, App A	
	9/2	linearization	9.2	
3	9/7	pole-zero locations and time response	3.3-3.5	Lab 1
	9/9	stability, Routh criteria	3.6	
4	9/14	Case study, PD control	4.1, 4.2	Lab 2
	9/16	PID control	4.3	
5	9/21	Root locus	5.1-5.2	
	9/23	Root loci examples	5.3	
6	9/28	dynamic compensation	5.4	Lab 3
	9/30	Freq response, Bode Plots	6.1-6.2	
7	10/5	Nyquist Stability criterion	6.3	Lab 4 pt1
	10/7	stability margins	6.4-6.6	
8	10/12	Lead-lag Compensation	6.7	Lab 4 pt2
	10/14	Midterm Review		
9	10/19	**Midterm**		
	10/21	State space intro	7.1-7.3	
10	10/26	Analysis of state space equations	7.4	
	10/28	solving state space equations, transfer function, e^{AT}	Notes, App C (5^{th} ed)	
11	11/2	controllability, observability	notes, App D (5^{th} ed)	Lab 5a
	11/4	state feedback	7.5	
12	11/9	pole placement	7.6	Lab 5b
	11/11	Observer design	7.7	
13	11/16	Compensator design	7.8	Lab 5c
	11/18	Linear Quadratic Regulator	notes	
14	11/23	Intro to Discrete Time Control	6.8, 8.1-8.3	
		Holiday		
15	11/30	Case Studies		Lab 5d
	12/02	Final Review		
	Wed. 12/15, 8-11 AM	Final Exam		