

Website	All announcements, homework, solutions, notes will be posted on https://bcourses.berkeley.edu/ Make sure you have access to this site!
Instructor	Kameshwar Poolla, poolla@berkeley.edu , 5141 Etcheverry Office hours: Thursdays, 3:00-5:00 pm; begins the 2nd week, Jan.26 Location: 5102 Etcheverry
Assistants	Office hours (Location: 1171 Etcheverry, begins the 2nd week, Jan.25) Yujia Wu, yujia.wu@berkeley.edu Friday 09:00-11:00am Minghui Zheng, minghuizheng@berkeley.edu Wednesday 3:00-5:00pm
Prerequisites	Math 1A, 1B, E7. Exposure to MatLab. Some previous exposure to Matrix Algebra will be valuable. ME 104 or equivalent can be taken concurrently.
Lectures	MWF 2-3 pm, 105 Northgate.
Discussions	Discussions begin the 1st week (Jan. 17th, Tu, 5:00-6:00 pm) . You can attend any discussion section. Dis Sec 1: Tu 05:00-06:00 pm 10 Jacobs Dis Sec 2: Th 12:00-13:00 pm 1171 Etcheverry Dis Sec 3: Fri 11:00-12:00 pm 10 Jacobs
Grading	(tentative plan) 2 midterms [25% each] + homework [15%] + final [35%] I may decide to offer a project, in which case the weights will change.
Text	None is required. Notes will be provided for <i>most</i> of the topics covered. I strongly suggest you attend lecture and take good notes.
Reference	K. Astrom and R. Murray, <i>Feedback Systems: An Introduction for Scientists and Engineers</i> , Princeton University Press, Princeton, NJ, 2008. Available at the Student Store and online (free). On 2-hour reserve at the Engineering Library. I will suggest other reading material during the course.
Exam Dates	(midterm dates are tentative) Midterm 1: Friday, March 03, 5:00-6:30pm Midterm 2: Monday, April 10, 5:00-6:30pm Final: Tuesday, May 9, 11:30-2:30pm

Announcements, Resources, etc

Announcements, homework assignments, solutions, and course material will be posted on bspace. The class email list is also controlled through bcourses, so please be sure you have access to bcourses and your current email address is up to date in Bearfacts. Please check the course website frequently for updates.

Homework

Homework will be posted on bcourses on Thursdays and due at *4:45 pm sharp the following Friday*. Turn in your homework at the Drop Box (labeled *ME 132*) on the 3rd floor (south end) of Etcheverry Hall.

You must attach the Homework Cover Sheet.

(so we can return the homework in the correct discussion section)

The cover sheet is available on bcourses.

No late homework will be accepted. No exceptions.

I understand that sometimes you may not be able to submit the homework on time.

So, I will give you two free passes: your two lowest homework grades will be dropped.

Homework solutions will be posted on bcourses after 5:00 pm on the due date.

Homework will be returned in discussion.

Matlab proficiency

We assume everyone has taken E7 or a comparable Matlab class.

If you are unfamiliar with the basics of Matlab, make an appointment to meet with a teaching assistant as soon as possible.

Introduction to Simulink sessions

Introduction to Simulink sessions will be offered during the first week of instruction during regular discussion times. You must attend at least one session if you have not used Simulink.

Tentative Schedule

Week 1	The power of feedback; terminology, structure of control systems, block diagrams, major concepts.
Week 2	Cruise control example; signals, systems, models, controllers.
Week 3	First order systems; free response, step response, frequency response, transfer functions; control.
Week 4	Second order systems; PID control; anti-wind-up strategies.
Week 5	General LTI systems; transfer functions; stability; frequency response;
Week 6	Interconnected systems; root-locus; Nyquist theorem; delays.
Week 7	Stability robustness and robustness margins
Week 8	Linear algebra review; introduction to state-space
Week 9	Realizations; general solution
Week 10	State-feedback; pole-placement; observers; separation principle.
Week 11	Nonlinear systems; equilibrium points; linearization.
Week 12	Feedback linearization; Gain-scheduling.
Week 13	System identification; estimation; model predictive control; adaptation.
Week 14	New frontiers.