# ECE 486: Control Systems

Instructor: Bin Hu (binhu7@illinois.edu)

Homework TAs: Usman Ahmed Syed (usyed3@illinois.edu), Haoran Yuan (haorany7@illinois.edu)

Lab Manager: Dan Block (d-block@illinois.edu)

Lab TAs: Qingyuan Liu (ql21@illinois.edu), Junjie Gao (junjieg2@illinois.edu),
Christoph Elias Aoun (caoun2@illinois.edu)

Course Information:
Lectures: T/Th 12:20 - 13:50, ECEB 3017
Prerequisites: ECE 210

Course Description:
This is a first course in feedback control of dynamic systems. A design oriented approach is stressed. Computer based analysis, combined with an accompanying laboratory, provide a realistic setting for mastering several important design methodologies. Concurrent development of basic concepts in lecture and homework provides a foundation for continued study of advanced topics and newly emerging methods. Students come from a wide range of disciplines since control is an interdisciplinary topic.

Course Outline:

- Dynamic models and dynamic response
- Root locus techniques
- Frequency response techniques
- State feedback design

Grading: 20% HW (six in total)+20% Quiz (five in total)+30% Lab+10% midterm (one in-class exam)+20% final

Textbook: Feedback Control of Dynamic Systems by Franklin, Powell, and Emami-Naeini (Edition 8). Previous editions should, for the most part, be fine, as the material will not be substantially different. We will closely follow the slides posted on the course website.

Office Hours: Bin: Tue 10-11am, CSL 145; Usman: Wed 4-5pm, ECEB 4036; Haoran: Th 11am-12, ECEB 3003
Class participation: You are expected to participate in class activities and discussions actively.

Homeworks: Homeworks are due by the end of Thursday. Extensions will be granted with instructor approval in advance. Otherwise late homeworks without such prior approval will not be accepted. Besides Homework 0, there will be 6 assignments in total. The one with the lowest score will be dropped in the final grade calculations. Homework 1 will be posted on 09/05 and due by the end of 09/12. See the course website for the detailed HW schedule. Please use the Entry Code: 2BER82 for enrollment on Gradescope.

Quiz: Each quiz will take 20 minutes the Thursday lecture, and there are 5 in total. Practice problem sets and solutions will be provided one week before each quiz. Quiz 1 is scheduled on 09/19. See the course website for the detailed quiz schedule.

Exams: There will be one midterm and one final exam. More instructions will be sent out later.

Policy on re-grades: Re-grades will be considered if you believe there is an error in the grading of your homework, laboratory, or exam. You should explain the issue in writing and resubmit it to the TAs with a detailed explanation attached. The TAs will re-grade which means you could end up with a higher or lower grade than before.

Accommodations for students with disabilities: If you think you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress.

Academic Integrity: All students are subject to the university's academic integrity policies. A quick reference guide, as well as links to the official student code, can be found at: https://provost.illinois.edu/policies/policies/academic-integrity/students-quick-reference-guide-to-academic-integrity/