CALIFORNIA INSTITUTE OF TECHNOLOGY
Control and Dynamical Systems

CDS 112 - Introduction to Theory of Feedback Systems
Fall 1994

Instructor
R. Murray, 317 Thomas
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Office hours: Friday, 1–2 pm

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Grading

The final grade will be based on homework and a final exam.

- Homework: 75%
  There will be 8 one-week problem sets, due in class. Late homework will not be accepted without prior permission from the instructor.
- Final exam: 25%
  The final will be handed out the last day of class and is due back at the end of finals week. Open book, time limit to be decided.

If your score on the final is higher than the weighted average of your homework and final, your final will be used to determine your course grade.

Homework and exam policy

Collaboration on homework assignments is encouraged. You may consult outside reference materials, other students, the TA, or the instructor. All solutions that are handed in should reflect your understanding of the subject matter at the time of writing.

No collaboration is allowed on the final exam.

Course Text and References

The course text is

J. Doyle, B. Francis, A. Tannenbaum, *Feedback Control Theory*, Macmillan, 1992.

It is available in the bookstore.

Course outline

Week	Topics	Reading
1	Introductory remarks, matlab	DFT Ch. 1
2	Norms for signals and systems	DFT Ch. 2
3	Basic feedback concepts: internal stability, tracking	DFT Ch. 3
4	Uncertainty and robustness, robust performance	DFT Ch. 4
5	Stabilization, parameterization of controllers	DFT Ch. 5
6	Design constraints	DFT Ch. 6
7	Loopshaping	DFT Ch. 7
8	Advanced loopshaping	DFT Ch. 8
9	MIMO extensions	notes
10	Advanced topics	notes