University of California, Irvine
Department of Mechanical and Aerospace Engineering
MAE 170 Course Outline, Winter Quarter, 2005

Instructor: J.E. Bobrow; Office, Engineering Gateway 3220; Phone (949) 824-4116, email: jebobrow@uci.edu, office hours: Tuesday and Thursday 1:30-2:30 pm.

Classroom: MSTB 118, Tuesday and Thursday, 9:30–10:50 am.

Discussion: Teaching assistants Zhi Liang and Benjamin Park will lead discussions on homework and on the use of Matlab on Wednesday 12:00-12:50p, room SST 220B; Thursday 11:00-11:50 and 12:00-12:50 in room IERF B011.

Text: **Modern Control Engineering,** Fourth Edition, by K. Ogata, Prentice Hall.

Web Reference: A nice control tutorial with Matlab is located at http://www.engin.umich.edu/group/ctm/ .

Software: Students need to use Matlab with the control systems toolbox. You can purchase the software, or use the Engineering PC lab in EG3151. You can get a key card with a $20 deposit from the SOE Dean's office, REC 305.

Course topics (and sections covered in text): This course presents the control theory that complements the experiments in MAE 106. Some demonstrations will be given class.

1. Review of Laplace Transforms (All of Chapter 2).
2. System Modelling (Chapter 3, pages 53-95, 112-113. Op-amps are covered in MAE106).
3. Thermal and Fluid systems (Selected material from Chapter 4, pages 169-191).
4. Response of systems to general inputs (Selected material from all of Chapter 5).
5. Root Locus analysis (All of Chapter 6).
6. Root Locus design (All of Chapter 7).
7. Frequency response analysis (Selected topics from Chapter 8).
8. Frequency response design (Selected topics from Chapter 9).

Grading Policy:

    20% Homework
    35% Midterm Exam (at approximately week 6)
    45% Final Exam