

**ME 3281: System Dynamics and Control
Spring Semester, 2009**

<http://www.me.umn.edu/courses/me3281/>

Instructor:

Professor Traian Dumitrica

Office: ME - 244

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Office hours: Monday, Wednesday, and Friday, 01:15 pm - 02.15 pm

Lecture: 3:35-4:50, *Tuesday and Thursday*, Tate Laboratory 166

Teaching Assistants:

Andrew Hoytink (hoit0005@umn.edu)

Recitation 1: Monday 11:15 A.M. - 12:05 P.M. in AkerH 225 Office hours: TBD

Tim Pommer (timothy.pommer@gmail.com)

Recitation 2: Monday 12:20 P.M. - 01:10 P.M. in RapsonH 56 Office hours: TBD

Required Text:

C. M. Close, D. K. Frederick and J. C. Newell, *Modeling and Analysis of Dynamic Systems*, 3rd. ed., Wiley.

Course Description:

The purpose of this course is to introduce you to the fundamental principles of dynamic systems (mechanical, electronic, thermal, fluid, and hybrid). To describe the real system, we will develop *ideal* mathematical models based on differential equations. From analytical solutions and computer simulation of these equations, we will be able to understand how the dynamic system responds when subjected to various inputs. The objective of the course is to develop the ability to construct and solve mathematical models in order to answer questions concerning engineering systems.

Course Policies:

1. The course consists of three hours of lecture and two hours of recitation per week. Lecture hours will be used to introduce new topics and solve example problems. Recitation sessions will be used to solve additional problems, answer questions about the homework and as review sessions before midterm and final exams. Students are encouraged to actively participate in lectures and recitations by asking questions and giving suggestions.

2. Homework will be due regularly. Late homework is not accepted since homework solutions will be available after class. If your homework is not complete, turn in whatever you have at the time. Homework will be accepted late **ONLY** if verifiable circumstances are approved by the instructor (not TA). You must obtain approval from the instructor in advance to attach to your homework.

3. Three exams will be given:

Midterm Exam 1, Tuesday, February 24, 1 hour

Midterm Exam 2, Tuesday, April 7, 1 hour

Final Exam, Wednesday, May 13, 2 hours

Make-up exams are given **ONLY** if the instructor approves verifiable circumstances before the scheduled test date.

4. Grading:	Midterm Exam 1	25%
	Midterm Exam 2	25%
	Final Exam	30%
	Homework	<u>20%</u>
	Total	100%

5. Study Groups: Students are encouraged to form study groups and work on assignments together. However, the work that you submit for a grade must be your own, and reflect your own understanding of the course material. Do not submit a copied-over version of someone else's homework: work the problem yourself!

6. Scholastic Conduct: This course adheres to the Regents' Policy on Student Conduct, which can be found at: www1.umn.edu/regents/policies/academic/StudentConduct.html

Scholastic dishonesty is unacceptable, and will result in the loss of all points on the assignment or exam, and will be referred to the IT Conduct Code Coordinator and the Office for Student Academic Integrity (OSAI: ref. www.osai.umn.edu). Serious offenses can result in expulsion.