Course Objective:
Use the computer to assist or automate engineering design and analysis tasks.

Course Topics
1. Computer Graphics
   Review elements of the Matlab programming language and software development techniques. Draw and animate mechanical systems using existing object-oriented graphics libraries and the concept of homogeneous transformations. Design and implement graphical user interfaces.

2. Computer-aided Design and Drafting
   Understand the various classes of CAD systems and be able to discuss relative strengths and weaknesses. Learn one CAD system (ProEngineer) well enough to do simple concept modeling.

3. Design Optimization
   Determine the values of a set of design variables that both satisfies existing design constraints and results in an optimal design of a mechanical component or system.

4. Finite Element Analysis
   Introductory principles, capabilities, and modeling techniques. Solve basic stress analysis problems using ANSYS.

References (recommended but not required):
Toogood, R., Pro/Engineer Wildfire Tutorial, SDC Publications, 2003 (+later versions of Wildfire)
Mathworks, Student Edition of Matlab

References (required):
Lawrence, K., ANSYS Workbench Tutorial, SDC Publications, 2011

Prerequisites: IT or grad student; ME 3222, CSCI 1113 or equiv.
Time and Place: MW 4:40-6:45 KHKH 3-230
Final Exam: Monday, May 13, 4:40-5:40 same room
Grading:
Projects (4): 60% total (15% each)
Homeworks: 20% total
Final Exam 20%

Course Policies: See “Course Policies“ writeup.