

**ME 290R Topics in Manufacturing, Spring 2011:
Computer-Aided Design and Manufacturing**
<http://www.me.berkeley.edu/~mcmains/290R/>

Instructor: Prof. Sara McMains
5145 Etcheverry Hall, 642-9359
Office Hours: Tu 5-6, Fri TBA
(note: will start Tu OH in 1165 Etch)
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Lectures:

TuTh 3:30-5, 1165 Etcheverry

Required Text:

The only required reading will be handouts and research papers that will be distributed in class or made available via the course web site.

Requirements:

Read assigned papers and turn in short summaries at the start of lecture.
2 midterm quizzes on the reading & lecture material
(tentatively scheduled for March 8 & April 28)
~6 homework assignments

Grading:

45% Homework
45% Quizzes
10% Paper summaries and class participation

Pre-requisites:

Graduate standing in engineering or permission of instructor.

Course Topics:

Applications drawn from:

- CAD/CAM
- Computer Aided Process Planning (CAPP)
- Robotics
- Inspection
- Reverse Engineering
- Mold-making/Casting
- Layered Manufacturing
- Tolerancing

Tools & Techniques drawn from:

- Solid modeling
- Graph-based methods
- Offsets
- Medial axis transforms (skeletons)
- Space and data partitioning
- Minkowski sums
- Voronoi diagrams
- Delaunay triangulations
- Numerical accuracy and robustness
- Boundary representations (B-reps)
- Constructive Solid Geometry (CSG)
- Mesh simplification
- Boundary healing