

California Polytechnic State University  
Department of Industrial & Manufacturing Engineering  
San Luis Obispo, CA 93407

## Syllabus for IME 335 Computer-Aided Manufacturing I

Winter quarter, 2004

### Course Description:

This course introduces you to modern manufacturing with three areas of emphasis: computer aided design, computer aided manufacturing, and computer aided process planning.

This course has two goals. First you will learn two CAD/CAM software: CAD software SolidWorks and CAM software BobCAD/CAM. The second goal is to learn the important theory, concepts, technology, and the state-of-the-art development in CAD/CAM. It is very important to understand how the CAD/CAM systems work and know the current industry status. The subjects covered in this class include part design specification, NC programming, process planning, and Computer aided process planning (CAPP), CAD and CAM systems, and CAD/CAM data exchange.

**Lecture:** Tue., Thurs. 8:00-9:30AM

**Lab:** Tue. 12:00-3:00PM

### Instructors:

Dr. Jianbiao (John) Pan

Office: Building 36 Room 202

Phone: 756-2540

Email: [pan@calpoly.edu](mailto:pan@calpoly.edu)

Office hours: Wed., Thurs. 1 – 3:30pm, or by appointment

### Textbooks

- Required: None
- Recommended:

*Computer-Aided Manufacturing*; Tien-Chien Chang, Richard A. Wysk, and Hsu-Pin Wang, 2<sup>nd</sup> Ed. (1998), Prentice Hall. (ISBN 0-13-754524-X)

Reserved at Library Call No. [TS155.6 C48 1998](#)

*Automation, Production Systems, and Computer Aided Manufacturing*, 2<sup>nd</sup> Ed. (2001), Mikell P. Groover, Prentice Hall. (ISBN 0-13-088978-4)

*Fundamentals of Graphics Communication*, 3<sup>rd</sup> Ed. (2002), Gary Bertoline, Eric Wiebe, and Craig Miller, McGraw/Hill. (CAD drafting reference)

Course information and most course materials will be posted at Blackboard.

**Tentative Schedules\***

Day	Date	Topic	Lab
T	1/06/04	Introduction to Mfg Systems and CAM	Lab #1: SolidWorks
R	1/08/04	Part Design Specification	
T	1/13/04	Part Design Specification	Lab #2: SolidWorks
R	1/15/04	Part Design Specification	
T	1/20/04	Manual NC Programming	Lab #3: SolidWorks
R	1/22/04	Exam I	
T	1/27/04	Manual NC Programming	Lab #4: SolidWorks
R	1/29/04	Manual NC Programming	
T	2/03/04	Manual NC Programming	Lab #5: Manual NC Programming
R	2/05/04	Group Technology	
T	2/10/04	Exam II	Lab #6: CAM Programming
R	2/12/04	Process Planning	
T	2/17/04	Process Planning	Lab #7: CAM Programming
R	2/19/04	Process Planning	
T	2/24/04	Computer Aided Process Planning	Lab #8: Rapid Prototyping
R	2/26/04	Exam III	
T	3/02/04	CAD and CAM System	Lab #9: Rapid Prototyping
R	3/04/04	CAD-CAM Data Exchange	
T	3/09/04	Project Presentation	Lab #10: (TBA)
R	3/11/04	Review	
T	3/16/04	Final Exam	

\*Note that while I will try to stick to this schedule but things may well change along the way. Thus this must be considered only as a tentative guide.

**Grading**

Lab	25%
Homework Assignments	20%
Project	10%
Exams	45%

Homework and lab assignments are very important aspects of this class. You will learn a lot by doing homework and lab. Homework and lab report should be professional quality (clear, concise, and correct).

There will be 4 exams (including final exam) total. I will drop the lowest exam grade before calculating your final score. If you miss one exam or do badly in one exam, your final score will be judged by other three.

Lab assignments will be due at the beginning of lab the following week. All late assignments lose value at the rate of 25% per day.

**Course objectives**

After the successful completion of this course, students should:

1. be able to understand drawings with all the necessary details (dimensions, tolerances, and surface finishes)
2. be able to create drawings using commercial solid modeling CAD software
3. be able to program NC codes manually
4. be able to generate NC codes using commercial CAM package
5. have the understanding of process capability, tolerances, the cost model, and manufacturability
6. be able to create process plan
7. have known the current status of CAD/CAM systems in industry

**Attendance**

Attendance is important and expected, but not required. However, students are responsible for material covered in class.

**Academic Honesty**

All students are expected to conform to all University Standards of conduct. You are encouraged to work together on homework and lab assignments, but all work presented in examinations, homework and lab assignments must be your own. Any case of academic dishonesty will be pursued.