



## ME-635 COMPUTER AIDED DESIGN

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Office Hours: will be announced in class and posted in instructor's website  
– see **Instructor Schedule Grid**

### Text Books:

1. Principles of CAD/CAM/CAE Systems by Kunwoo Lee, Addison-Wesley, 1999  
ISBN 0-201-38036-6
2. Pro/ENGINEER Advanced Tutorial Release Wildfire  
A Click-by-Click Primer by Roger Toogood, SDC Publications  
ISBN 1-58503-187-9

### Reference:

3. Pro/ENGINEER Tutorial Release Wildfire  
A Click-by-Click Primer by Roger Toogood, SDC Publications  
ISBN 1-58503-186-0

### Course Description:

This is a course introducing various concepts of CAD (Computer Aided Design) and CAM (Computer Aided Manufacturing) as applied to Mechanical Engineering design problems. Topics include solid modeling, assembly, creating detailed drawing of solid models and production drawings, manufacturing models and generating cutter location data (CL Data) in Numerical Control machining such as turning and milling machines for design models. The laboratory component involves use of current CAD/CAM software packages.

**Prerequisites:** ME-616 and ME-622 or department approval.

### Miscellaneous:

- NJIT Academic Honor Code will be upheld, and any violations will be brought to the immediate attention of the Dean of Students – visit <http://www.njit.edu/academics/honorcode.php>.
- For any modifications or deviations from the syllabus throughout the course of the semester, instructor will consult with students and the students must agree to.

Week Number:	TOPICS	Lab. works	Assignment
1	Introduction – course overview	Introduction to Unix – CDE or Windows XP; Begin Pro/E Wildfire; Lesson 1 – Protrusions & Cart Project Introduction	Pro/E Project Excercises
2	Introduction to CAD/CAM/CAE & CIM; Component of CAD/CAM/CAE Systems – Hardware and Software  Chapter 1 & 2	Lesson 2 - Sweeps	Pro/E Project Excercises
3	Component of CAD/CAM/CAE Systems – Hardware and Software ... Continued.  Chapter 2	Lesson 3 – Tweaks and Rounds	Pro/E Project Excercises
4	Basic Concepts of Computer Graphics - Graphics Libraries; Coordinate Systems; Transformation matrix; Graphical User Interface.  Chapter 3	Lesson 4 – Patterns and Family Tables	Pro/E Project Excercises
5	Geometric Modeling Systems – Wireframe, Surface, and Solid Modeling Systems.  Chapter 5	Lesson 5 - User Defined Features	Pro/E Project Excercises
6	Geometric Modeling Systems – Nonmanifold, Assembly and Web-Based Modeling Systems.  Chapter 5.	Lesson 6 – Pro/PROGRAM and Layers	Pro/E Project Excercises
7	<b>Mid-term Exam &amp; Final Project proposal</b>	Lesson 7 - Drawings	Pro/E Project Excercises
8	Standards for Communicating Between Systems  Chapter 14	Lesson 8 – Working with Assembly	Pro/E Project Excercises
9	Representation and Manipulation of Curves.	Lesson 8 – Working with Assembly	Assemble the CART project
10	Chapter 6 Representation and Manipulation of Surfaces.  Chapter 7	Lesson 8 – Working with Assembly and Assembly Drawing with BOM	Assemble the CART project
11	CAD and CAM Integration –	Pro/MANUFACTURE	Working on Pro/MANUFACTURE

	Introduction		Project
12	Chapter 10 Numerical Control – Introduction	Pro/MANUFACTURE	Working on Pro/MANUFACTURE Project
13	Chapter 11 Numerical Control – Continued	Pro/MANUFACTURE	Working on Final Project
14	Chapter 11 Numerical Control – Continued	Pro/MANUFACTURE	Working on Final Project
	Chapter 11		
15	Final Project Review <b>Final Exam and Final Project Due</b>		

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### Grading Scheme:

The grade will be based on the following:

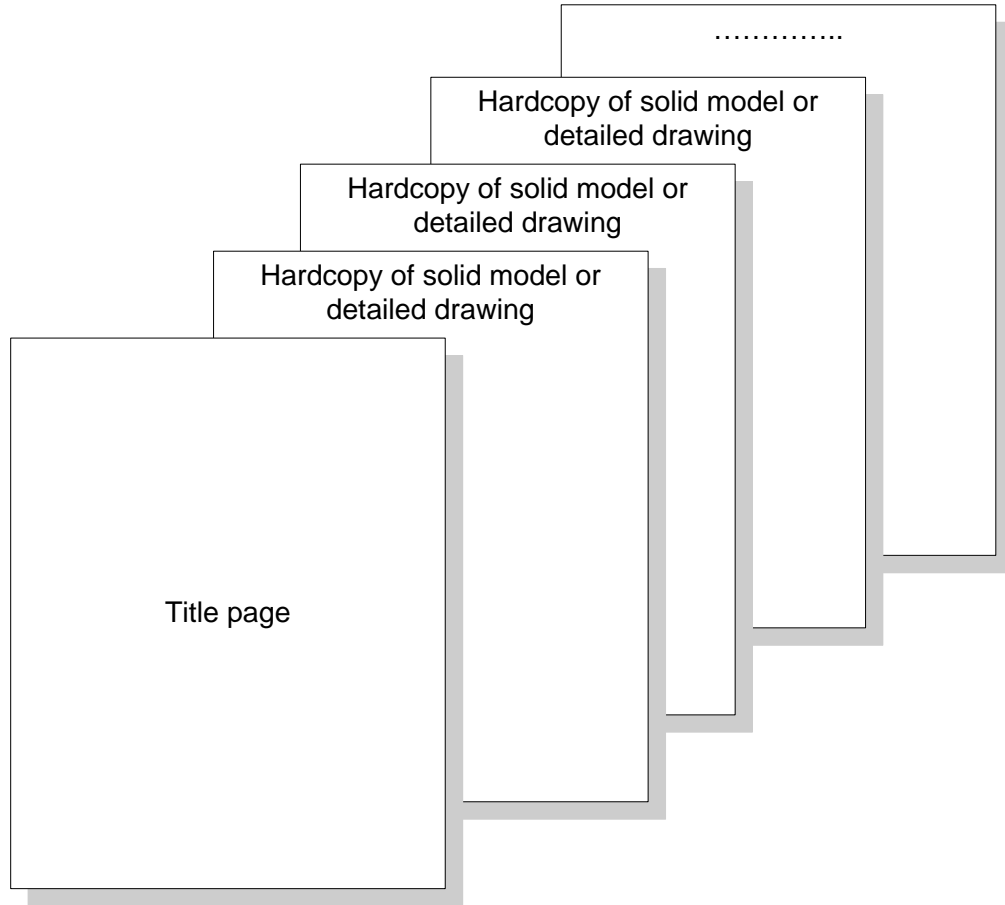
Homeworks	10%
Lab Works – Cart Project	30%
Midterm and Final Exams	30%
Final Project	30%
Total	100%

Homework related to the lectures will be assigned, collected and graded.

The laboratory will be in MEC-219, and will have hands-on sessions to cover the basics and advanced features of the Pro/ENGINEER and Pro/MANUFACTURER.

### SUBMITTED ASSIGNMENT FORMAT:

Projects / assignments should be submitted according to the following format:



**Sample of Title Page:**



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# **ME-635 Computer Aided Design**

**AT NEW JERSEY INSTITUTE OF TECHNOLOGY**

**Name of Assignment/Project**

**by**

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**Instructor: Dr. Herli Surjanhata**

**September 1, 2005**