

ME 447 Introduction to CAD

Fall 2010

Instructor: Farid Amirouche
Professor Mechanical Engineering
Professor of Orthopaedics

Office: 2027 ERF

CAD Lab: 1083 ERF

Office Hours: M-W 11:00AM - 12:00PM

E-mail: amirouch@uic.edu

Textbook: Principles of Computer Aided Design and manufacturing

Author: Farid Amirouche

Publisher: Prentice hall, 2004

Class TA's: Matthew Cantwell mcantw2@uic.edu

Office Hours: T 2:00PM - 3:00PM

For homework assignments and solutions, visit the class website at:

<http://www.uic.edu/classes/me/me447/>

Topics: - The following are the topics which will be covered during the semester:

1. Computer Aided Design
 - Characteristics of CAD
 - Parametric design
 - Variational design
 - Examples

2. Transformation and Manipulation of Objects
 - 2D and 3D transformation
 - Reflection, projection, Zoom
 - Rotation about arbitrary axis, Successive transformation
 - Initial and Final positions of objects
 - Isometric views

3. Description of Curves and Surfaces
 - Regression line, curve fitting polynomials
 - Parametric versus Nonparametric cubic splines
 - Bezier curve

4. Int. to FEM
 - Basic concepts in FEM
 - Potential Energy Functions
 - Closed form Solutions
 - WRM
 - Galerkin Method

5. Application of FEA to trusses
 - Properties of Local Stiffness
 - Global stiffness
 - Solution of Trusses
 - Stress Analysis

6. Heat Conduction using FEM(If time permits)

Homework: Assigned each week on Monday or Wednesday and will be collected the following week.

Grading:

Test 1	15%	
Test 2	15%	
Final	20%	
Lab	50%	(Homework 50% and Final Project 50%)

Total	100%	

The grading of the lab homework and projects will be handled by the TA's.