

DEREE COLLEGE SYLLABUS FOR:

CS 2137 COMPUTER AIDED DESIGN (CAD)

1/2/2

(Updated Spring 2007)

(Previously CS 2237)

PREREQUISITES: CS 1070 Introduction to Information Systems

CATALOG

DESCRIPTION: Introduction to computer aided design concepts with application to AutoCAD. Experimentation with the construction of engineering and architectural models in two and three dimensions. Creation of photorealistic models (rendering).

RATIONALE: A seminar workshop in applied computer aided design (CAD) and AutoCAD, this course involves the use of computers in the design and manufacturing of materials. Students will be familiar with design methods, which are applied by architects, engineers, and artists in the representation of artifacts.

OBJECTIVES: As a result of taking this course, the student should be able to:

1. Develop a basic understanding of 2-D and 3-D spaces.
2. Draw complex shapes in two dimensions.
3. Familiarize himself or herself with all 3-D drawing models.
4. Draw 3-D shapes of moderate complexity.
5. Enhance the capabilities of AutoCad 14 with Autolisp.
6. Employ rendering for photorealistic drawings.
7. Set up the drawing for the final printing.

LEARNING

ACTIVITIES: The course will be conducted in the lab through lectures, hands-on practice case studies as well as creative workshop projects. Students will be trained in the College's lab resources and learning facilities.

EVALUATION: The student's grade will be based on:

1. An in-class exercise project	25%
2. A case project assignment	20%
3. A major project testing objectives 1 to 7	25%
4. A comprehensive final exam testing objectives 1 to 7	30%

Grading Scale:

90 – 100 A

80 – 89 B

70 – 79 C

60 – 69 D

Below 60 F

REQUIRED

MATERIAL:

TEXTBOOK:

George Omura, Mastering AutoCAD 2000; Wiley Publishing, ISBN 0764531925.

OTHER REFERENCES:

Stephen J. Ethier et al. AutoCAD in 3 Dimensions: (Windows version), Prentice-Hall College Div. ISBN 0133537560

CONTENT OUTLINE:

1. Introduction to CAD/ACAD V14
2. User Interface of ACAD
 - 2.1. Customising Menus/Toolbars
3. Coordinate Systems (2-D/3-D)
4. Basic 2-D Drawing Commands
 - 4.1. Line/Circle/Rectangle
5. Basic 2-D Editing Commands
 - 5.1. Moving/Copying/Rotating/Scaling
 - 5.2. Mirror/Array/Offset/Trim/Stretch
6. Layers
 - 6.1. Working with Layers
 - 6.2. Changing Colour/Linetypes
7. Dimensioning
8. Creating Text
9. Autolisp
 - 9.1. The Autolisp Programming Paradigm
 - 9.2. Enhancing AutoCAD (Spiral Array).
10. Working with Coordinate Systems
11. Advanced 2-D Drawing Commands
 - 11.1. Multilines
 - 11.2. Splines
 - 11.3. Plines
12. Drawing in 3-D
 - 12.1. Wireframe Model
 - 12.2. Surface Model
 - 12.2.1. Box/Wedge/Pyramid/Cone....
 - 12.2.2. Creating: Revolved/Extruded/Ruled/Edge Surfaces
 - 12.3. Solid Model
 - 12.3.1. Box/Sphere/Cylinder....
 - 12.3.2. Creating Extruded/Revolved/Complex Solids
 - 12.3.3. Slicing/Editing solids
13. Rendering
 - 13.1. Light Source-Position/Materials/Texture
 - 13.2. Rendering Algorithms
14. Drawing in Perspective