Dr. K.N.M.I.E.T. MODINAGAR

AutoCAD Syllabus **CIVIL, MECH & CHEM. ENGG. DEPT.**

Overview of the Course

Computer Aided Design in a 20 lectures course per semester. The CAD course is hands-on in nature using current CAD software on pc platforms. Students will utilize a variety of drafting and design software tools using CAD to execute two-dimensional drawings and various illustrations. Students will produce drawings of their own design as well as assigned exercises. Drawings will be printed/plotted and evaluated.

Course Goals

A skilled CAD draftsperson is responsible for designing much of what you see around you—your computer. the desk, and lighting—and much of what you don't see, including your building's HVAC and electrical systems, the surrounding landscaping and roads, and your telecommunication networks. These drawings must be understood by hundreds of other people in our society. Computer Aided Drafting (CAD) is the modern "Renaissance" in creating and developing industrial, manufacturing, and construction drawings. CAD, like many other forms of digitized mediums; provide convenient avenues of communicating instantaneous information around the world by virtue of the Internet, e-mail attachments, and specialized CAD reader software.

Even though AutoCAD is a popular and powerful design and development tool, it is a little more complicated than learning how to use Microsoft Word or Excel. Furthermore, those interested in becoming a proficient and skilled Computer Aided Design (CAD) professional benefit from the detailed training in AutoCAD providing the skills that architects, engineers, drafters, and design-related professionals use to create 2D designs and drafting.

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Course Description

This course expands mechanical drafting knowledge and skills by providing the necessary training in the use of modern CAD software. The student will gain an understanding of the creative and technical processes in CAD drawings by exploring the framework of modern technologies through personal perceptions, vision and responses. In giving form to these ideas, the student should develop the intuitive, critical, and logical thinking processes afforded by the experiences. The knowledge and skills learned in this class will afford students the opportunity to explore career and college paths in fields such as, but not limited to, engineering, manufacturing, and industrial or architectural design.

Course Objectives

Through successful completion of the course, each student will be able to:

- Explain the historical development of CADD, current use in industry and education and basic terminology regarding microcomputers and operating systems.
- Identify the basic parts of a computer system and interface with the computer's operating system
- Manage and manipulate the CAD system's file management commands
- Comprehend the units-of-measure used by the CAD system
- Demonstrate a working knowledge of the Cartesian coordinate system
- Use standard predefined prototype or template files

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Lecture 1	An Introduction to CAD Historical background Current industrial use Careers Ethical issues (software)	**2 hrs**	Lab with mini project
Lecture 2	Associated costs of operation Educational use Future outlook Computer Systems	**2 hrs**	Lab with mini project
Lecture 3	Hardware components (CPU, Software, Hardware, etc.) File management (Opening, formatting, saving	**2 hrs**	Lab with mini project
Lecture 4	Operating system Cold and warm "booting"	**2 hrs**	Lab with mini project
Lecture 5	Designating and switching drives Windows operation and navigation	2 hrs	Lab with mini project
Lecture 6	CAD Functionality level -I Loading and starting a CAD program	**2 hrs**	Lab with mini project
Lecture 7	Main menu options Scratch drawings	**2 hrs**	Lab with mini project
Lecture 8	Accessing file drawings	**2 hrs**	Lab with mini project
Lecture 9	Designation of prototype Creating and working with shared CAD files	**2 hrs**	Lab with mini project
Lecture 10	Accessing file drawings	**2 hrs**	Lab with mini project
Lecture 11	Saving CAD files Setting Drawing Parameters Standard settings Limits/Drawing Size Units Using Prototype Drawings	**2 hrs**	Lab with mini project
Lecture 12	Accessing file drawings	2 hrs	Lab with mini project

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Lecture 13	Advantages/ disadvantages Working with fontsDrawing using the Cartesian Coordinate System	**2 hrs**	Lab with mini project
Lecture 14	Arc Polygon	**2 hrs**	Lab with mini project
Lecture 15	Accessing file drawings	**2 hrs**	Lab with mini project
Lecture 16	Defining X, Y coordinate system Using the command line Command line function and format	**2 hrs**	Lab with mini project
Lecture 17	Accessing file drawings	**2 hrs**	Lab with mini project
Lecture 18	Comparison of relative to absolute coordinates Input using X, Y distances relative to last point Comparison of Polar coordinates to Absolute & Relative	**2 hrs**	Lab with mini project
Lecture 19	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 20	class assessment test	**2 hrs**	Lab with mini project
Total		**40 hrs**	

Semester V

Lecture No.	Topics	HOURS	LAB
Lecture 1	Revisions of 2D commands: Draw ,modify, properties, layer etc	2 hrs	
Lecture 2	Assign drawing exercises Arc	**2 hrs**	Lab with mini project
Lecture 3	Saving CAD files Setting Drawing Parameters Annotations and properties	**2 hrs**	Lab with mini project

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	commands Standard settings Limits/Drawing Size Units		
Lecture 4	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 5	Controlling the Screen Display Zoom command Pan ,Redraw & Region Transparent	**2 hrs**	Lab with mini project
Lecture 6	Assign drawing exercises	**2hrs**	Lab with mini project
Lecture 7	Revision of all modify commands Different command operation Trim Extend Modification Different command	**2 hrs**	Lab with mini project
Lecture 8	Using Prototype Drawings Designation of prototype drawing Possible uses of drawing commands Copy Rotate etc Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 9	Using the command line Command line function and format	**2 hrs**	Lab with mini project
Lecture 10	class Test	**2 hrs**	Lab with mini project
Lecture 11	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 12	Why use 3D? Types of Three-Dimensional Models Advantages of Drawing in 3 dimensional	**2 hrs**	Lab with mini project

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Lecture 13	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 14	Viewing a 3D Model Rotating the View Additional Shading Modes	**2 hrs**	Lab with mini project
Lecture 15	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 16	3D basics create commands Extrude, loft, revolve, sweep	**2 hrs**	Lab with mini project
Lecture 17	Assign drawing exercises	**2 hrs**	Lab with mini project
Lecture 18	3D basics edit commands Presspull ,union ,subtract ,intersect	**2 hrs**	Lab with mini project
Lecture 19	Assign drawing exercises	**2 hrs**	
Lecture 20	class assessment test	**2 hrs**	Lab with mini project
Total		**40 hrs**	

Semester VII

Lecture No.	Topics	HOURS	Labs
Lecture 1	Revisions of 2D commands; Draw ,modify, properties, layer etc	**2 hrs**	Lab with mini project
Lecture 2	Assign drawing exercises objects	**2 hrs**	Lab with mini project

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Lecture 3	Why use 3D? Types of Three-Dimensional Models Advantages of Drawing in 3 dimensional	**2 hrs**	Lab with mini project Lab with mini project
Lecture 4	Join Chamfer Units Limits Draft a Plans	**2 hrs**	
Lecture 5	Assign drawing exercises objects	**2 hrs**	Lab with mini project
Lecture 6	Solid modeling concept What is solid modeling? Wireframe Models Surface Models	**2 hrs**	Lab with mini project
Lecture 7	Assign drawing exercises objects	**2 hrs**	Lab with mini project
Lecture 8	Solid Models Extruding 2D Geometry Edit 3D solids Box	**2 hrs**	Lab with mini project
Lecture 9	Assign drawing exercises objects	**2 hrs**	Lab with mini project
Lecture 10	Introduction of 3D View manager Orthographic/Isom etric views Rotate 3D	**2 hrs**	Lab with mini project
Lecture 11	Assign drawing exercises objects	**2 hrs**	Lab with mini project
Lecture 12	Dynamic UCS 3D basics create commands Extrude, loft, revolve, sweep	**2 hrs**	Lab with mini project
Lecture 13	Assign drawing exercises objects	**2 hrs**	Lab with mini project

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Lecture 14	3D basics edit commands Presspull ,union ,subtract ,interseet	2 hrs	Lab with mini project
Lecture 15	Assign drawing exercises objects	2 hrs	Lab with mini project
Lecture 16	3D -Dimensioning Modifying dimension styles Dimension Toolbar	2 hrs	Lab with mini project
Lecture 17	Assign drawing exercises objects	2 hrs	Lab with mini project
Lecture 18	3d Solid Editing Adding and altering objects	2 hrs	Lab with mini project
Lecture 19	Assign drawing exercises Project and Project and review	2 hrs	Lab with mini project
Lecture 20	class assessment test	4 hrs	
Total		40 hrs	

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