



Autodesk AutoCAD: 2D and 3D

Course Objective

The objective of this course is to provide students with a comprehensive understanding of AutoCAD software and its applications in both 2D and 3D design. Through a structured curriculum student will develop proficiency in utilizing AutoCAD to create accurate and visually appealing drawings in both dimensions. Learners will be equipped with the skills and knowledge necessary to confidently utilize AutoCAD for both 2D drafting and 3D modeling, empowering them to excel in various design disciplines.

Course Outcome

Learner will be able to...

- Understand the fundamentals of AutoCAD
- Create precise 2D and 3D drawings
- Utilize advanced 2D drawing techniques
- Transition to 3D modeling
- Generate realistic renderings and visualizations
- Enhance productivity and efficiency

Course Outline

The course comprises 40-hours of theory and labs and is divided into 16 different modules.

Module 1: Getting Started with AutoCAD

- Starting the Software
- Creating a Drawing File
- Opening an Existing Drawing File
- Viewing your Drawing
- User Interface (2D and 3D Display)
- Setting up the Workspace (2D or 3D) and Setting up the Limits
- Setting up the Units
- Mouse Controls



- Selection Methods
- Working with Commands
- Understanding Coordinate System
- Saving Your Work

Module 2: Basic Drawing and Editing Commands

- Drawing Lines (Vertical, Horizontal and Inclined Line)
- Drawing Rectangles
- Drawing Circles
- Erasing Objects
- Undo and Redo Actions

Module 3: Drawing Precision in AutoCAD

- Using Running Object Snaps
- Using Object Snap Overrides
- Object Snap Tracking

Module 4: Advanced Object Types

- Drawing Arcs
- Drawing and Editing Polylines
- Drawing Polygons
- Drawing Ellipses
- Drawing Splines
- Drawing Construction lines, Rays, Points, and Multiple Points
- Applying Hatches, Gradient Hatches and Editing Hatches

Module 5: Making Changes in Your Drawing

- Selecting Objects for Editing
- Moving Objects
- Copying Objects



- Rotating Objects
- Scaling Objects
- Mirroring Objects
- Editing with Grips

Module 6: Advance Editing Commands

- Trimming and Extending Objects
- Stretching Objects
- Creating Fillets and Chamfers
- Offsetting Objects
- Creating Arrays of Objects
- Using Explode Command
- Using Join Command
- Using Align Command
- Using Break and Break at point Command
- Using Overkill Command
- Using Divide, Measure, and Wipe-out Command
- Using Region and Boundary Command

Module 7: Analyzing Model and Object Properties

- Working with Object Properties
- Measuring Objects

Module 8: Organizing Your Drawing with Layers

- What are Layers?
- Layer States
- Creating New Layers
- Changing an object 's Layer
- Using Match Layer and Layer Walk tools
- Using Layer Isolate, UnIsolate, and Merge tools



- Using Layer Translator

Module 9: Working with Blocks

- What are Blocks
- Creating Blocks
- Inserting Blocks
- Editing Blocks
- Adding Blocks to Tool Palettes
- Inserting Blocks using the Tool Palettes
- Working with Dynamic Blocks
- Inserting Blocks using the Design Center

Module 10: Working with Text Annotations

- Adding Single line text
- Adding Multiline text
- Formatting Multiline text
- Adding Notes with leaders to your drawing
- Creating Tables

Module 11: Adding Dimensions

- Dimensioning concepts
- Adding Linear Dimensions
- Adding Radial and Angular Dimensions
- Editing Dimensions
- Using Measure tool to find dimension of an object
- Using Dimjogline and Break line tool

Module 12: Working with Templates and Layout

- Why use Templates
- Creating some new drawings with Template



- Working in Layout
- Creating Layouts
- Creating Layout Viewports
- Advance Viewport options
- Creating and using named views
- Layer overrides in viewports

Module 13: Parametric Drawing

- Working with Constraints
- Geometric Constraints
- Dimensional Constraints

Module 14: External References

- Attaching External references
- Modifying External references
- Xref specific Information

Module 15: Printing Your Drawing

- Printing Concepts
- Printing Layouts
- Print and Plot Settings

Module 16: AutoCAD 3D

- How to setup AutoCAD for 3D
- 3D AutoCAD drawing
- AutoCAD Extrude
- AutoCAD Revolve
- AutoCAD Loft
- AutoCAD Sweep
- AutoCAD Presspull



- Offset & Blend
- Taper Face & Slice
- Subtraction of objects in AutoCAD
- 3D Intersection in AutoCAD
- How to unite 3D objects in AutoCAD
- Shell in AutoCAD