

# Autodesk AutoCAD 2D and 3D

## Target Audience

This course is designed for architects, engineers, designers, and professionals in various industries who want to gain comprehensive knowledge of Autodesk AutoCAD, covering both 2D drafting and 3D modeling techniques for creating detailed designs and visualizations.

## Course Objective

The objective of this course is to equip participants with the skills to create, edit, and annotate precise 2D drawings and develop 3D models, enabling them to visualize and present designs effectively while adhering to industry standards.

## Course Outcome

- Learn to navigate the AutoCAD interface and create accurate 2D drawings using essential drafting tools.
- Develop skills in layer management, annotations, and dimensioning to produce organized and communicative 2D designs.
- Gain proficiency in creating and editing 3D models using tools such as extrude, revolve, and sweep.
- Understand how to render and visualize 3D models, as well as generate 2D views from 3D designs for technical documentation.

**Course Outline:** The course comprises **40-hours** of theory and labs and is divided into **16** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

## **Chapter 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

## **Chapter 2. Basic Drawing and Editing Commands**

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

## **Chapter 3. Drawing Precision in AutoCAD**

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

## **Chapter 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

## **Chapter 5. Making Changes in Your Drawing**

- Selecting Objects for Editing
- Moving Objects
- Copying Objects
- Rotating Objects

Scaling Objects  
Mirroring Objects  
Editing with Grips

## **Chapter 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

## **Chapter 7. Analyzing Model and Object Properties**

Working with Object Properties  
Measuring Objects

## **Chapter 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

## **Chapter 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

## **Chapter 10. Working with Text Annotations**

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

## **Chapter 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

## **Chapter 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

## **Chapter 13. Parametric Drawing**

- Working with Constraints
- Geometric Constraints
- Dimensional Constraints

## **Chapter 14. External References**

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

## **Chapter 15. Printing Your Drawing**

- Printing Concepts
- Printing Layouts
- Print and Plot Settings

## Chapter 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