



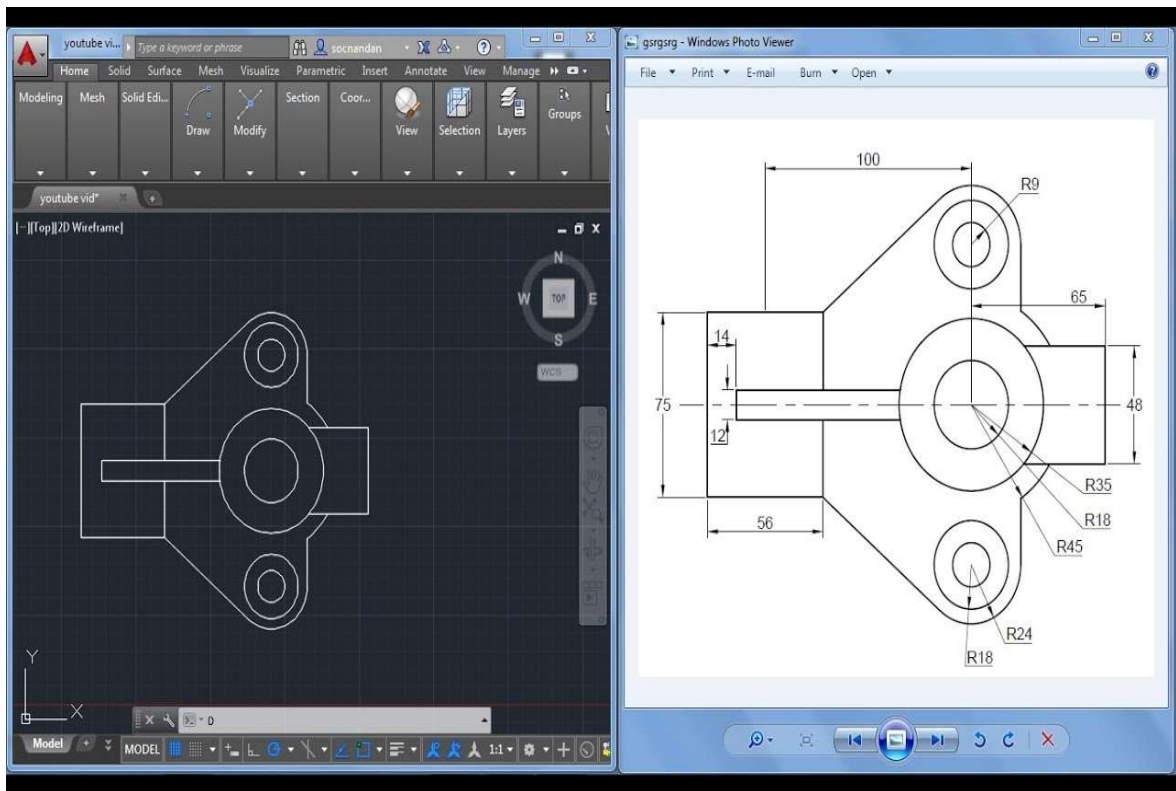
## NTPC-MAITI BARKAGAON PRIVATE INDUSTRIAL TRAINING INSTITUTE

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AutoCAD is a commercial computer-aided design (CAD) and drafting software application. Developed and marketed by Autodesk, AutoCAD was **first released in December 1982** as a desktop app running on microcomputers with internal graphics controllers.



## AutoCAD syllabus

### 1: INTRODUCTION TO AUTOCAD

#### Starting AutoCAD

AutoCAD Screen Components

Drawing Area

Command Window

Navigation bar  
Status bar

## **Invoking Commands in**

### **AutoCAD**

Keyboard

Ribbon

Application Menu

Tool Palettes

Menu Bar

Toolbar

Shortcut Menu

AutoCAD Dialog Boxes

Starting a New Drawing

Open a Drawing

Start from Scratch

Use a Template

Use a Wizard

Saving Your Work

Save Drawing as Dialog box

Using the Drawing Recovery Manager to Recover Files

Closing a Drawing

Opening an Existing Drawing

Opening an Existing Drawing Using the Select File Dialog Box

Opening an Existing Drawing Using the Start up Dialog Box

Opening an Existing Drawing Using the Drag and Drop Method

Quitting AutoCAD

Creating and Managing Workspaces

Creating a New Workspace

Modifying the Workspace Settings

Autodesk Exchange

Home

## **2: GETTING STARTED WITH AUTOCAD**

Dynamic Input Mode

Enable Pointer Input

Enable Dimension Input where possible

Show command prompting and command input near the crosshairs Drafting

Tooltip Appearance

Drawing Lines in AutoCAD

The Close Option

The Undo Option

Invoking tools Using Dynamic INPUT/Command Prompt

Coordinate Systems

Absolute Coordinate System

Relative Coordinate System

Relative Polar Coordinates

Direct Distance Entry

Erasing Objects

Cancelling and Undoing a Command

Object Selection Methods

Window Selection

Window Crossing Method

Drawing a Circle

BASIC Display Commands

Setting Units Type and Precision

Specifying the Format

Specifying the Angle Format

SETTING the Limits OF A DRAWING

### **3: STARTING WITH ADVANCED SKETCHING**

Drawing Arcs

Drawing Rectangles

Drawing Ellipses

Drawing Regular Polygon

Drawing Polylines

Placing Points

Drawing Infinite Lines

Writing a Single Line Text

### **4: WORKING WITH DRAWING AIDS**

Introduction

Understanding the Concept and use of LAYERS

Advantages of Using Layers

Working with Layers

Creating New Layers

Making a Layer Current

Controlling the Display of Layers

Deleting Layers

Object Properties

Changing the Colour

- Changing the Line type
- Changing the Line weight
- Changing the Plot Style
- Properties Palette
- Quick Properties Palette
- Drafting Settings dialog box
  - Setting Grid
  - Setting Snap
  - Snap Type
- Drawing Straight Lines using the Ortho Mode
- Working with Object Snaps
  - Auto Snap
  - Endpoint
  - Midpoint
  - Nearest
  - Centre
  - Tangent
  - Quadrant
  - Intersection
  - Apparent Intersection
  - Perpendicular
  - Node
  - Insertion
  - Snap to None
  - Parallel
  - Extension
  - From
  - Midpoint between 2 Points
  - Temporary Tracking Point
  - Combining Object Snap Modes
- Running Object Snap Mode
  - Overriding the Running Snap
  - Cycling through Snaps
- Using Auto Tracking
  - Object Snap Tracking
  - Polar Tracking
  - Auto Track Settings
- Function and Control Keys

## **5: EDITING SKETCHED OBJECTS-I**

- Editing Sketches
- Moving the Sketched Objects
- Copying the Sketched Objects
  - Creating Multiple Copies

- Creating a Single Copy
- Offsetting Sketched Objects
- Rotating Sketched Objects
- Scaling the Sketched Objects
- Filleting the Sketches
- Chamfering the Sketches
- Trimming the Sketched Objects
- Extending the Sketched Objects
- Stretching the Sketched Objects
- Lengthening the Sketched Objects
- Arraying the Sketched Objects
  - Rectangular Array
  - Polar Array
  - Path Array
- Mirroring the Sketched objects
  - Text Mirroring

## **6: EDITING SKETCHED OBJECTS-II**

- Introduction to Grips
- Types of Grips
  - Editing a Polyline by Using Grips
  - Editing Gripped Objects
  - Changing the Properties Using the PROPERTIES Pale
  - Matching the Properties of Sketched Objects
  - Cycling Through Selection
- Managing Contents Using the Design enter
  - Autodesk Seek design content Link
  - Displaying Drawing Properties
  - Basic Display Options
  - Redrawing the Screen
  - Regenerating Drawings
- Zooming Drawings
  - Real-time Zooming
  - All Option
  - Centre Option
  - Extents Option
  - Dynamic Option
  - Previous Option
  - Window Option
  - Scale Option
  - Object Option
  - Zoom In and Out
- Panning Drawings
  - Panning in Real time

## **7: CREATING TEXT AND TABLES**

Annotative Objects

Annotation Scale

Assigning Annotative Property and Annotation Scales

Customizing Annotation Scale

Multiple Annotation Scales

Assigning Multiple Annotation Scales Manually

Assigning Multiple Annotation Scales Automatically

Controlling the Display of Annotative objects

Creating Text

Writing Single Line Text

Entering Special Characters

Creating Multiline Text

Text Window

Text Editor Tab

Editing Text

Editing Text Using the DDEDIT Command

Editing Text Using the Properties Palette

Modifying the Scale of the Text

Inserting Table in the Drawing

Table style Area

Insert options Area

Insertion behaviour Area

Column and row settings Area

Set cell styles Area

Creating a New Table Style

Starting table Area

General Area

Cell styles Area

Setting a Table Style as Current

Modifying a Table Style

Modifying Tables

Substituting Fonts

Specifying an Alternate Default Font

Creating Text Styles

Determining Text Height

Creating Annotative text

## **8: BASIC DIMENSIONING, GEOMETRIC DIMENSIONING, AND TOLERANCING**

Need for Dimensioning

Dimensioning in AutoCAD

Fundamental Dimensioning Terms

Dimension Line

- Dimension Text
- Arrowheads
- Extension Lines
- Leader
- Centre Mark and Centrelines
- Alternate Units
- Tolerances
- Limits
- Associative Dimensions
- Definition Points
- Annotative Dimensions
- Selecting Dimensioning Commands
- Using the Ribbon and the Toolbar
- Using the Command Line
- Dimensioning a Number of Objects Together
- Creating Linear Dimensions
  - DIMLINEAR Command Options
  - Creating Aligned Dimensions
  - Creating Arc Length Dimensions
  - Creating Rotated Dimensions
  - Creating Baseline Dimensions
  - Creating Continued Dimensions
  - Creating Angular Dimensions
  - Dimensioning the Angle between Two Nonparallel Lines
  - Dimensioning the Angle of an Arc
- Angular Dimensioning of Circles
  - Angular Dimensioning based on Three Points
  - Creating Diameter Dimensions
  - Creating Radius Dimensions
  - Creating Jogged Linear Dimensions
  - Creating Ordinate Dimensions
  - Maintaining Equal Spacing between Dimensions
- Creating Inspection Dimensions
  - Inspection Label
  - Dimension Value
- Working with True Associative Dimensions
  - Inspection Rate
  - Removing the Dimension Associatively
  - Converting a Dimension into a True Associative Dimension
  - Drawing Leaders
  - Multileader
    - Adding leaders to existing Multileader
    - Removing Leaders from Existing Multileader
- Aligning Multileaders

- Distribute
- Make leader segments Parallel
- Specify Spacing
- Use current spacing
- Geometric Dimensioning and Tolerance
- Geometric Characteristics and Symbols
- Adding Geometric Tolerance
  - Feature Control Frame
  - Geometric Characteristics Symbol
  - Tolerance Value and Tolerance Zone Descriptor
  - Material Condition Modifier
  - Datum
- Complex Feature Control Frames
  - Composite Position Tolerance
  - Projected Tolerance Zone
- Creating Annotative Dimensions, Tolerances, Leaders, and Multileaders

## **9: EDITING DIMENSIONS**

- Editing Dimensions Using Editing Tools
- Editing Dimensions by Stretching
  - Editing Dimensions by Trimming and Extending
  - Flipping Dimension Arrow
  - Modifying the Dimensions
  - Editing the Dimension Text
  - Updating Dimensions
  - Editing Dimensions with Grips
  - Editing Dimensions using the Properties Palette
  - Properties Palette (Dimension)
  - Properties Palette (Multileader)
- Model Space and Paper Space Dimensioning

## **10: DIMENSION STYLES, MULTILEADER STYLES, AND SYSTEM VARIABLES**

- Using Styles and Variables to Control Dimensions
- Creating and Restoring Dimension Styles
- New Dimension Style dialog box
- Controlling the Dimension Text Format
- Fitting Dimension Text and Arrowheads
- Formatting Primary Dimension Units
- Formatting Alternate Dimension Units
- Formatting the Tolerances
- Creating and Restoring Multileader Styles
- Modify Multileader Style dialog box

## **11: MODEL SPACE VIEWPORTS, PAPER SPACE VIEWPORTS, AND LAYOUTS**

- Model Space and Paper Space/Layouts
- Model Space Viewports (Tiled Viewports)
  - Creating Tiled Viewports
- Making a Viewport Current
- Joining Two Adjacent Viewports
- Paper space viewports (Floating Viewports)
  - Creating Floating Viewports
  - Creating Rectangular Viewports
  - Creating Polygonal Viewports
  - Converting an Existing Closed Object into a Viewport
- Temporary Model Space
- Editing Viewports
  - Controlling the Display of Objects in Viewports
  - Locking the Display of Objects in Viewports
  - Controlling the Display of Hidden Lines in Viewports
  - Clipping Existing Viewports
  - Maximizing Viewports
  - Inserting Layouts
  - Inserting a Layout Using the Wizard
  - Defining Page Settings
  - Controlling the Display of Annotative Objects in Viewports

## **12: PLOTTING DRAWINGS**

- Plotting Drawings in AutoCAD
- Plotting Drawings Using the Plot Dialog Box
  - Page setup Area
  - Printer/plotter Area
  - Paper size Area
  - Number of copies Area
  - Plot area
  - Plot offset (origin set to printable area) Area
  - Plot scale Area
  - Plot style table (pen assignments) Area
  - Shaded viewport options Area
  - Plot options Area
  - Preview
- Adding Plotters
  - The Plotter Manager Tool
- Using Plot Styles
  - Adding a Plot Style

## **13: HATCHING DRAWINGS**

Hatching

Hatch Patterns

Hatch Boundary

Hatching Drawings Using the Hatch Tool

Panels in the Hatch Creation Tab

Boundaries Panel

Pattern Panel

Properties Panel

Origin Panel

Options Panel

Match Properties

Setting the Parameters for Gradient Pattern

Creating Annotative Hatch

Hatching the Drawing Using the Tool Palettes

Drag and Drop Method

Select and Place Method

Hatching Around Text, Dimensions, and Attributes

## **14: WORKING WITH BLOCKS**

The Concept of Blocks

Advantages of Using Blocks

Drawing Objects for Blocks

Converting Entities into a Block

Inserting Blocks

Creating and Inserting Annotative Blocks

Block Editor

Adding Blocks in Tool Palettes

Drag and Drop Method

Modifying Existing Blocks in the Tool Palettes

Layers, Colours, Line types, and Line weights for Blocks

Nesting of Blocks

Creating Drawing Files using the Write Block Dialog Box

Exploding Blocks Using the XPLODE Command

Renaming Blocks

Deleting Unused Blocks

Editing Constraints to Blocks