

Module 1: Introduction to AutoCAD

- What is CAD and AutoCAD?
- Applications of AutoCAD in engineering, architecture, and design
- AutoCAD interface: menus, ribbons, toolbars, command line
- File management: creating, saving, and printing drawings

Module 2: Basic Drawing Tools

- Drawing lines, circles, arcs, polygons, ellipses
- Coordinate systems (absolute, relative, polar)
- Object snaps and tracking
- Editing tools: erase, copy, move, rotate, scale, trim, extend

Module 3: Drafting & Annotation

- Layers and properties (color, linetype, linewidth)
- Dimensioning and text annotation
- Hatch patterns and gradients
- Blocks and attributes
- Working with templates

Module 4: Advanced Drawing & Editing

- Polyline, spline, and multiline tools
- Grouping and object isolation
- Advanced modify commands (fillet, chamfer, offset, mirror, array)
- Working with external references (Xrefs)
- Using design center and tool palettes

Module 5: 2D Drafting Projects

- Floor plans and architectural layouts
- Mechanical part drawings
- Electrical circuit diagrams
- Civil engineering site plans

Module 6: 3D Modeling Basics

- Introduction to 3D workspace
- Creating 3D objects (box, cylinder, cone, sphere, extrude, revolve)
- Editing 3D models (union, subtract, intersect)
- Viewports and visual styles
- Rendering basics

Module 7: Advanced 3D Modeling

- Surface modeling and mesh tools
- Solid editing and modification
- Materials and lighting
- Walkthroughs and camera views
- Exporting 3D models

Module 8: Plotting & Printing

- Page setup and layouts
- Plot styles and scales
- Printing 2D drawings and 3D models
- Exporting to PDF and other formats

Module 9: Practical Projects & Assessment

- Draft a residential building floor plan
- Create mechanical component drawings
- Design a 3D model of a product
- Final project: Complete architectural or engineering design project

Learning Outcomes

By the end of this course, students will:

- Understand AutoCAD interface and commands
- Create professional 2D drawings and annotations
- Build and edit 3D models with rendering
- Apply CAD skills in architecture, mechanical, civil, and electrical projects
- Prepare drawings for printing and presentation