AutoCAD Mechanical Essentials

In this class, users learn the features, tools, and proper techniques for creating 2D mechanical drawings using AutoCAD® Mechanical. The hands-on exercises, representing real-world design scenarios, teach users how to efficiently create mechanical designs and engineering production drawings. The primary objective of this class is to teach users the basic skills necessary to become proficient with professional 2D mechanical drawing, design, and drafting using AutoCAD Mechanical. After completing this class, users will be able to:

- Identify and use the key components of the AutoCAD Mechanical user interface.
- Use the fundamental features of AutoCAD Mechanical.
- Use the precision drafting tools in AutoCAD Mechanical to develop accurate technical engineering drawings.
- Demonstrate a high level of comfort and confidence with AutoCAD Mechanical through hands-on practice.

Duration

4 days

Typical Schedule

This class starts each day at 9:00 am and ends at 4:00 pm.

Prerequisites

Completion of "AutoCAD Fundamentals" Class (recommended but not necessary).
Knowledge of Drafting, design, or mechanical engineering principles.
Proficient with Microsoft® Windows®

Topics Covered

- Interacting with the User Interface
  - Ribbon Interface
  - Accessing HELP information
- Common Drawing Setup
  - Overview of Drawing Templates
  - Overview of Standards Based Design
  - Creating New Drawings based on Templates
  - Creating New Templates
  - Modifying Template Location
- Object Property and Layer Management
  - Review of Automatic Layer Management
  - Managing Layers Using AutoCAD Mechanical Layer Manager
  - Layer Functions
  - Layer Display
  - Controlling Geometry Layers
- Organizing Drawing Geometry
  - Organization Methods & Mechanical Structure
  - Creating Components & Component Views
  - Creating Folders Within a Component View
  - Restructuring Components
  - Control of Structure Creation
- Reusing and Editing Structured Data
  - Structure Definitions, Instances, & Occurrences
  - Reusing Structured Data from Catalog
  - Edit Structure Definition
  - Changing Display of Instances
- Tools for Creating Key Geometry
  - Creating Rectangles
  - Placing Hatch
  - Adding Chamfers
  - Creating Contours
  - Power Snaps
  - Centerlines
  - Construction Lines
  - Section Lines
  - Symmetrical Lines
- Standard Feature Data for Holes & Slots
  - Standard Content
  - Standard Features
  - Inserting Standard Holes
  - Inserting Threaded Features
  - Inserting Slot Features
- Geometry Manipulation
  - Copying & Offsetting Objects
  - Joining Entities
  - Breaking Objects into Multiple Parts
  - Scaling Objects
  - Power Commands
  - Associative Hide
- Standard Parts
  - Parts Library Overview
  - Inserting Standard Parts via Parts Library, Ribbon and Menus
  - Screw Components
  - Screw Templates
  - Leader Notes
- Chains & Belts
  - Creating Sprockets & Pulleys
  - Calculate Chain & Belt Lengths
  - Inserting Chains & Belts
- Shaft Generator
  - Generating Shafts
  - Creating Shaft Sections
  - Shaft Contour Features
  - Creating Complex Shaft Segments
  - Associative Shaft Views
  - Inserting from the Shaft Generator
- Springs
  - Inserting Springs from a Standard
  - Inserting Modified Designed Springs
  - Inserting Springs by Only Drawing the Geometry

- Creating Drawing Sheets
  - Model Views in Layouts
  - Detail Views in Layouts
  - Creating Scale Areas
  - Creating Viewports
  - Viewport Layer On/Off
  - Creating Drawing Sheets
  - Scale Overrides
  - Annotation Views When Using Structure
  - Title Blocks and Drawing Borders
- Dimensioning and Annotating Drawings
  - Insert Text
  - Insert Weld Symbols
  - Inserting Feature Control Frames
  - Symbol Libraries
  - Datum & Feature Identifiers
  - Datum Targets
  - Taper & Slope Symbols
  - Standards Symbol Settings
- Creating & Editing Dimensions
  - Power Dimensions
  - Chamfer Dimensions
  - Dimension Standards
  - Power Edit
  - Editing Multiple Dimensions
  - Arranging & Aligning Dimensions
  - Joining, Splitting, Breaking Dimensions
  - Checking Dimensions
- Bill of Materials, Parts Lists, & Balloons
  - Adding & Editing Part References
  - Creating Bill of Materials
  - Structured Components & the BOM
  - Sorting BOM Data
  - Inserting & Editing Parts List
- Design Calculations
  - Moment of Inertia
  - Deflection Line
  - Shaft Stresses
  - FEA Stresses
- Leveraging your Existing Data
  - DWG Files
  - IGES Files

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