

# AutoCAD 2021: 3D Drawing and Modeling Outline

## Overview:

This will be a 3-day course for AutoCAD® 3D Drawing and Modeling. The material in this course introduces users to the concepts and methods of 3D drawings and modeling. The course provides a thorough grounding in the fundamentals of 3D and explores the main features of the advanced 3D Modeling workspace in the AutoCAD software. Some of the topics that are covered in the 3D Drawing and Modeling course will be:

## Topics Covered:

- 3D viewing techniques
- Working with simple and composite solids
- Creating complex solids and surfaces
- Modifying objects in 3D space
- Editing solids
- Creating sections, camera perspectives, and animations
- Working with point clouds
- Converting 3D objects
- Setting up a rendering with materials and lights
- Creating 2D drawings from 3D models
- Working with the User Coordinate System
- Set up a drawing for 3D Prints

## Prerequisites:

Must have taken the AutoCAD 2021: Essentials Course and AutoCAD 2021: Advanced Course have a general understanding of those courses. You will also need a working knowledge of the Windows operating system.

## Completion of the Course:

At the completion of this course the student will have a good working knowledge of the 3D AutoCAD environment and be well on their way to begin 3D modeling or ready to begin exploring other AutoCAD 3D software.

## **Course Content:**

### **Chapter 1: 3D Foundations**

- 1.1 Why Use 3D?
- 1.2 Introduction to the 3D Modeling Workspace
- 1.3 Basic 3D Viewing Tools
- 1.4 3D Navigation Tools
- 1.5 Introduction to the User Coordinate System (UCS)

### **Chapter 2: Simple Solids**

- 2.1 Working with Solid Primitives
- 2.2 Solid Primitive Types
- 2.3 Working with Composite Solids
- 2.4 Working with Mesh Models

### **Chapter 3: Working with the User Coordinate System (UCS)**

- 3.1 UCS Basics
- 3.2 UCS X, Y, and Z Commands
- 3.3 UCS Multi-functional Grips
- 3.4 Saving a UCS by Name

### **Chapter 4: Creating Solids & Surfaces from 2D Objects**

- 4.1 Complex 3D Geometry
- 4.2 Extruded Solids and Surfaces
- 4.3 Swept Solids and Surfaces
- 4.4 Revolved Solids and Surfaces
- 4.5 Lofted Solids and Surfaces
- 4.6 NURBS Surfaces

### **Chapter 5: Modifying in 3D Space**

- 5.1 3D Gizmo Tools
- 5.2 Aligning Objects in 3D Space
- 5.3 3D Modify Commands

## **Chapter 6: Advanced Solid Editing**

- 6.1 Editing Components of Solids
- 6.2 Editing Faces of Solids
- 6.3 Fillets and Chamfers on Solids

## **Chapter 7: Additional Editing Tools**

- 7.1 Creating a Shell
- 7.2 Imprinting Edges of Solids
- 7.3 Slicing a Solid along a Plane
- 7.4 Interference Checking
- 7.5 Converting Objects to Surfaces
- 7.6 Converting Objects to Solids

## **Chapter 8: Refining the View**

- 8.1 Working with Sections
- 8.2 Working with Cameras
- 8.3 Managing Views in 3D
- 8.4 Animating with ShowMotion
- 8.5 Creating ShowMotion Shots
- 8.6 Creating Animations

## **Chapter 9: Point Clouds**

- 9.1 Point Clouds

## **Chapter 10: Visualization**

- 10.1 Creating Visual Styles
- 10.2 Working with Materials
- 10.3 Specifying Light Sources
- 10.4 Rendering Concepts

## **Chapter 11: Working Drawings from 3D Models**

- 11.1 Creating Multiple Viewports
- 11.2 2D Views from 3D Solids
- 11.3 Creating Technical Drawings with Flatshot
- 11.4 3D Model Import
- 11.5 Automatic Model Documentation