



## AUTODESK INVENTOR ADVANCE TRAINING

### **Objectives**

The main objective of this course is to teach users the advance commands and tools necessary for professional 3D design using Inventor. After completing this course users will be able to:

- ✓ Multi-body part modeling, iFeatures, and iParts
- ✓ Advanced geometry creation tools and Drawing Tools
- ✓ Analysis tools & Generative shape design using Shape Generator
- ✓ Importing data from other CAD systems and making edits.
- ✓ Use Freeform modeling, Emboss and Decal features
- ✓ Applying Top-Down Design technique for creating assemblies and its components.
- ✓ Able to use Shrinkwrap and other model simplification tools, create Positional Representations and use Frame Generator
- ✓ Able to create Level of Detail Representations, use Design Accelerator, and create rendered realistic images and animations
- ✓ Using iMates and iAssemblies to work efficiently with assemblies.

### **Pre-requisites**

This guide is designed for an Inventor User. It is recommended that you have a working knowledge of:

- Microsoft® Windows® 7, Microsoft® Windows® 8 or Microsoft® Windows® 10
- Fundamental Inventor Part, Assembly, and Drawing
- A background in designing and drafting 3D parts is recommended.

### **Chapter 1: Tips & Sketching Tools**

- Design Philosophies
- Sketching Tips
- Display Options
- Appearances
- Editing a Spline
- 3D Sketch Tools
- Modifying 3D Sketch Entities
- Dimensioning & Constraining

### **Chapter 2: Multi-Body Part Modeling**

- Multi-Body Part Modeling
- Creating the First Solid Body
- Creating Additional Solid Bodies
- Assigning Features to Solid Bodies
- Manipulating Solid Bodies
- Solid Body Display & Properties

### **Chapter 3: Advanced Work Features**

- Grounded Work Points
- Convert an Existing Work Point to a Grounded Work Point
- Create a Grounded Work Point
- User Coordinate Systems
- Locating the UCS Relative to the Model Origin & Existing Geometry
- Redefining UCS Placement
- UCS Visibility and Naming

### **Chapter 4: Advanced Lofts, Sweeps, and Coils**

- Area Lofts
- Advanced Sweeps
- Path & Guide Rail/Surface Sweep
- Coils

### **Chapter 5: Analyzing a Model**

- Analysis Types
- Zebra Analysis
- Draft Analysis
- Curvature Analysis
- Surface Analysis
- Cross Section Analysis
- Analysis Procedures

### **Chapter 6: Generative Shape Design**

- Shape Generator
- Preparing a Model for Shape Generator
- Opening Shape Generator
- Material Assignment
- Applying Constraints & Load
- Shape Generator Settings
- Preserving Regions
- Assigning Symmetry
- Run the Shape Generator
- Promote the 3D Mesh Model

### **Chapter 7: Surfacing**

- Introduction to Surfaces
- Basic & Patch Surfaces
- Ruled & Stich Surfaces
- Sculpting with Surfaces
- Thickening & Offsetting a Surface
- Surfaces in Drawing Views
- Extend and Trim Surfaces
- Replace Face with a Surface
- Delete/Copy Faces

## **Chapter 8: iFeatures & iParts**

- Creating & Inserting iFeatures
- iFeatures vs. Copy Feature
- Table-Driven iFeatures
- Editing iFeatures
- iPart Creation & Placement
- Placing a Standard/Custom iPart
- Replacing an iPart
- Editing an iPart Factory & Table
- Adding Features to an iPart
- Creating iFeatures from a Table-Driven iPart
- Tables for Factory Members

## **Chapter 10: Working with AutoCAD Data**

- Opening AutoCAD Files
- Importing DWG Files
- DWG File Underlays
- Importing a DWG File as an Underlay
- Controlling Layer Visibility
- Moving & Cropping an Underlay
- Using an Underlay to Create Geometry
- Working with other Autodesk Product Files
- Mechanical Desktop
- Alias Studio Files
- Autodesk Revit/3ds Max Files

## **Chapter 9: Importing Other Data**

- Importing CAD Data
- Exporting Geometry
- Editing the Base Solid
- Direct Edit
- Importing Surfaces
- Repairing Imported Surfaces

## **Chapter 11: Introduction to Freeform Modelling**

- Creating Freeform Geometry
- Creating Standard Freeform Shapes
- Creating a Face Freeform
- Converting Geometry to a Freeform
- Deactivating and Activating Freeform Mode
- Editing Freeform Geometry
- Working with Edges, Faces & Points
- Thickening/Mirroring Freeform Geometry
- Controlling Symmetry
- Deleting Entities

### **Chapter 12: Working Effectively with Assemblies**

- General Assembly Tips
- Relationship Tips
- Motion Constraints
- Transitional Constraints

### **Chapter 14: Derived Components**

- Derived Components
- Modify & Update Derived Components
- Edit Derived Components
- Break the Associative Link

### **Chapter 15: Layout Design**

- Layout Design
- Make Part
- Make Components

### **Chapter 16: Associative Links and Adaptive Parts**

- Associative Links
- Breaking Links
- Adaptive Assembly Parts
- Disabling Adaptivity
- Notes on Adaptivity

### **Chapter 17: iMates & iAssemblies**

- Creating iMates
- Composite iMates
- iMates in iParts
- Create Basic/Multi Level iAssemblies
- Create iAssemblies Using Existing Assemblies

### **Chapter 13: Introduction to Top-Down Design**

- Top-Down Design Process
- Top-Down Design Tools

- Place & Edit iAssemblies

### **Chapter 18: Representations**

- Introduction to Positional Representations
- Create and Edit Positional Representations
- Use Positional Representations
- Level of Detail Representations
- System-Defined Level of Detail Representations
- User-Defined Level of Detail Representations
- Using Level of Detail Representations
- Substitute Level of Detail Representations
- LOD Productivity Tools

### **Chapter 19: Model Simplification**

- Shrinkwrap
- Assembly Simplification
- Simplify View
- Define Envelopes
- Create Simplified Part

## **Chapter 20: Design Accelerator**

- Design Accelerator
- Generators & Calculators
- Engineer's Handbook

## **Chapter 21: Advanced File Management**

- Design Assistant Tools
- Pack and Go
- Purging Old Files

## **Chapter 22: Inventor Studio**

- Rendering
- Animation
- Video Producer
- Creating a Standard Room

## **Chapter 24: Assembly Duplication Options**

- Pattern Components
- Associative Pattern
- Rectangular Pattern
- Circular Pattern
- Mirror & Copy Components

## **Chapter 23: Frame Generator**

- Frame Generator
- Structural Shape Author

## **Chapter 25: Working with Weldments**

- Working with Weldments
- Preparations
- Machining Features
- Fillet, Cosmetic, & Groove Welds