

## SOLIDWORKS Advanced

### OVERVIEW

**CLASSROOM LENGTH:** 4 days / **INSTRUCTOR-LED ONLINE LENGTH:** 6 days

**PREREQUISITES:** We recommend completing the SOLIDWORKS Essentials course.

**DESCRIPTION:** SOLIDWORKS Advanced is a four-day training class that builds upon the Essentials lessons to provide instruction on advanced features and capabilities in SOLIDWORKS. Advanced Part Modeling teaches you how to use multi-body solids, sweeping and lofting features, and the more advanced shaping capabilities of SOLIDWORKS. Assembly Modeling teaches how to maximize your use of the assembly modeling capabilities of SOLIDWORKS.

#### LESSON 1:

##### MULTIBODY DESIGN TECHNIQUES

- Multibody Parts
- Hide/Show Tree Items
- Case Study: Multibody Design
- Solid Bodies Folder
- Local Operations
- Feature Scope
- Patterning Bodies
- Tool Body Technique
- Combining Bodies
- Case Study: Protective Screen
- Intersect with Solid Bodies
- Case Study: Bowl
- Indent Feature
- Case Study: Indent
- Deleting Solid Bodies
- Exercises 1-7

#### LESSON 2:

##### SAVING SOLID BODIES

- Multibody Part vs. Assembly
- Saving Bodies Functions
- Case Study: Clamp
- Insert into New Part
- Save Bodies
- Case Study: Boat Cleat
- Modeling for Rapid Tooling
- Splitting a Part into Multiple Bodies
- Split Feature
- Case Study: Handle
- Automating an Assembly
- Case Study: Using Split Part with Legacy Data
- Exercises 8-10

#### LESSON 3:

##### SKETCHING WITH SPLINES

- Curves in Sketches
- Using Sketch Pictures
- Case Study: Guitar Body
- Splines and Spline Relations
- Changing the Shape of a Spline
- Fully Defining Splines
- Evaluating Splines
- Case Study: Two Point Spline
- Analyzing Solid Geometry
- Style Spline and Fit Spline
- Case Study: Torsion Continuity
- Case Study: Watering Can
- Case Study: Coffee Cup
- Exercises 11-15

#### LESSON 4:

##### INTRODUCTION TO SWEEPING

- Sweeping
- Case Study: Faux Raised Panel Door
- Sweep with Guide Curves
- Case Study: Bottle Body
- The SelectionManager
- Case Study: Hanger Bracket
- Exercises 16-19

## SOLIDWORKS Advanced

### LESSON 5:

#### 3D SKETCHING AND CURVE FEATURES

- Curve Features
- Case Study: Spring
- Sweeping Along a 3D Path
- 3D Sketching
- Helix Curve and Spiral Feature
- Creating a 3D Curve from Orthogonal Views
- Projected Curve Feature
- Combining Curves and Smoothing Transitions
- Exercises 20-2

### LESSON 6:

#### THREADS AND LIBRARY FEATURE PARTS

- Bottle Features
- Case Study: Modeling Threads
- Saving a Library Feature Part
- Performance Considerations
- Case Study: Adding the Label Outline
- Creating the Sweep Path and Sweeping Edges
- Exercises 24-26

### LESSON 7:

#### ADVANCED SWEEPING

- Sweep Options
- Additional Sweep Settings
- Profile Orientation
- Case Study: Keep Normal Constant
- Intersection Curve Feature
- Visualizing Sweep Sections
- Case Study: Controlling Twist
- Case Study: Controlling Twist and Guide Curves
- Case Study: Align with End Faces
- Solid Profile
- Case Study: Drill Bit
- Exercises 27-31

### LESSON 8:

#### INTRO TO LOFT AND BOUNDARY FEATURES

- Comparing Complex Features
- How Lofting and Boundary Work
- Case Study: Defroster Vent
- Loft Feature
- Boundary Feature
- Case Study: Lofted Merge
- Case Study: Reusing Sketches
- Copying a Sketch and Modify Sketch
- Derived Sketches
- Boundary Preview Options
- Sketch Block and Library Feature Profiles
- Exercise 32-35

### LESSON 9:

#### ADVANCED LOFT AND BOUNDARY FEATURES

- Additional Curves in Loft and Boundary
- Centerline Lofting
- Case Study: Heat Shield
- Loft Preview Options
- Adding Sketch Segments
- Cleaning Up a Model
- Deleting Faces
- Evaluating Edges
- Face Fillets
- Case Study: Hook
- Curve Influence
- Exercises 36-38

### LESSON 10:

#### ADVANCED FILLETING AND OTHER FEATURES

- Fillet Settings
- Fillet Parameters
- Constant Size Fillets
- Delete Face: Delete and Fill
- Fillet Options
- Variable Size Fillets
- Face Fillets
- FilletXpert
- Other Advanced Features
- Wrap Feature
- Deform Feature
- Direct Editing
- Exercises 39-44

## SOLIDWORKS Advanced

### START OF ASSEMBLY MODELING BOOK

#### LESSON 11:

##### ADVANCED MATE TECHNIQUES

- SOLIDWORKS Assemblies
- Assembly File Structure
- File References and Example
- Solving Mates
- Advanced Mate Techniques and Shortcuts
- Case Study: Mate Shortcuts
- Mate References and Design Library Parts
- Capture Mate References
- Multiple Selection Mate References and Mode
- Driven Mates and Using Misaligned Mates
- Copying Multiple Components
- Case Study: Copy with Mates
- Using Copy with Mates
- Fixed Components
- Summary: Inserting and Mating Components
- Advanced Mate Features
- Case Study: Advanced Mate Features
- Profile Center Mate
- Exercises 1-5

#### LESSON 12:

##### TOP-DOWN ASSEMBLY MODELING

- Top-Down Assembly Modeling
- Stages in the Process
- Making Changes to Dimensions
- Case Study: Editing and Building In-Context
- Adding Features In-Context
- Inserting a New Part into an Assembly
- Building In-Context Features
- Propagating Changes
- Saving Virtual Parts as External
- External References
- Breaking and Locking External References
- Machine Design Intent
- SOLIDWORKS File Utilities
- Removing External References
- Exercises 6-8

#### LESSON 13:

##### SMART TECHNOLOGY

- Assembly Features and Smart Fasteners
- Case Study: Assembly Features
- Assembly Features
- Hole Series
- Smart Fasteners
- Smart Components
- Case Study: Smart Component
- Flexible Components
- Exercises 9-14

#### LESSON 14:

##### ASSEMBLY EDITING

- Assembly Editing
- Key Topics
- Case Study: Assembly Editing
- Mate Errors
- Replacing and Modifying Components
- Converting Parts and Assemblies
- Troubleshooting an Assembly
- Replacing and Reloading Components
- Component Patterns
- Exercises 15-18

#### LESSON 15:

##### USING CONFIGURATIONS WITH ASSEMBLIES

- Using Configurations with Assemblies
- Case Study: Assembly Configurations
- Creating Configurations and Properties
- Using the Modify Configurations Dialog
- Context Toolbar and Changing Configurations
- Managing the Tree Display
- Assembly Evaluation Tools
- Case Study: Hole Alignment
- Controlling Dimensions in an Assembly
- Creating an Equality
- Equations With Functions
- Sensors and Using the Mate Controller
- Exercises 19-21

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### LESSON 15:

#### DISPLAY STATES AND APPEARANCES

- Display States and Bulk Selection Tools
- Case Study: Display States
- Advanced Select
- Using Envelopes
- Appearances, Materials and Scenes
- Case Study: Appearances and Materials
- Exercises 22-2Mate
- Exercises 1-5

### LESSON 16:

#### DISPLAY STATES AND APPEARANCES

- Display States and Bulk Selection Tools
- Case Study: Display States
- Advanced Select
- Using Envelopes
- Appearances, Materials and Scenes
- Case Study: Appearances and Materials
- Exercises 22-23

### LESSON 17:

#### LARGE ASSEMBLIES

- Large Assemblies Key Topics
- Lightweight Components
- Large Assembly Mode
- Case Study: Large Assembly Options
- Using SpeedPak
- Using Configurations with Large Assemblies
- Defeature
- Modifying the Structure of an Assembly
- Assembly Visualization
- Large Design Review
- Tips for Faster Assemblies
- Drawing Considerations
- Exercise 24-27

### LESSON 18:

#### FACILITY LAYOUT

- Facility Layout and Publishing an Asset
- Using Magnetic Mates
- Modeling Connection Point Geometry
- Exercise 28

### LESSON 19:

#### USING SOLIDWORKS TREEHOUSE

- SOLIDWORKS Treehouse
- Setting Treehouse Instances
- Exporting Treehouse Data
- Exercise 29