



# SOLIDWORKS ASSEMBLY MODELING

## Who should attend:

**Application Engineer**  
**R&D Engineer**  
**Product Designer or Engineer**  
**Industrial Engineer**

## Prerequisites:

Attended SOLIDWORKS Essentials Course

Basic understanding of part design and drafting

Mechanical Design Experience

## Duration:

**3 Days**

## Methodology:

Practical hands-on with using computers, lecturing, discussions and case studies

## Introduction

The Assembly Modeling course is a must for anyone who wants to master the use of SOLIDWORKS for creating and using assemblies. You will learn how to parametrically relate different components in the context of an assembly, master the art of creating and managing all types of mates, save time designing complex mechanisms, create multiple variations of your design, perform quick selections of components, and become confident working fast with large assemblies.

## Objective

At the end of this program participants are expected to:

- Create assemblies using bottom-up and top-down design approaches
- Control and automate your assemblies with configurations
- Resolve assembly design problems
- Use sketches to layout the design of your assemblies
- Better manage large assemblies and save time

## IME CADCAM TRAINING CENTRE SDN BHD

**PJ:** 22A, Jln. PJS 1/46, Tmn. Petaling Utama, 46000 PJ, Selangor, Malaysia.  
Tel: +603-7783 6866 | Fax: +603-7783 4384

**PG:** 68, Jln. Perai Jaya 4, Bandar Perai Jaya, 13700 Pulau Pinang, Malaysia.  
Tel: +604-399 5571 | Fax: +604-399 5572

**JB:** 25-01, Jalan Bestari 8/2, Taman Nusa Bestari, 79150, Iskandar Puteri, Johor.  
Tel: +607-238 7978 | Fax: +607-238 2162

[training@cadcam.com.my](mailto:training@cadcam.com.my) | [www.cadcam.com.my](http://www.cadcam.com.my)



**ASSEMBLY MODELING**

Key Topics

**Day 1**

**Course Outline:**

**Lesson 1: Advanced Mate Techniques**

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

**Lesson 2: 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\_Vise Design Intent
- Removing External References

**Lesson 3: Assembly Features, Smart Fasteners, and Smart Components**

- Assembly Features and Smart Fasteners
- Assembly Features
- Case Study: Assembly Features
- Smart Fasteners
- Smart Components
- Case Study: Smart Component

**Day 2**

**Lesson 4: Assembly Editing**

- Assembly Editing
- Key Topics
- Editing Activities
- Case Study: Assembly Editing
- Replacing and Modifying Components
- Troubleshooting an Assembly
- Replacing Components Using Save As
- Reloading Components
- Component Patterns

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**ASSEMBLY MODELING**

Key Topics

**Day 2**

**Lesson 4: Assembly Editing**

- Assembly Editing
- Key Topics
- Editing Activities
- Case Study: Assembly Editing
- Replacing and Modifying Components
- Troubleshooting an Assembly
- Replacing Components Using Save As
- Reloading Components
- Component Patterns

**Lesson 5: Using Configurations with Assemblies**

- Using Configuration with Assemblies
- Case Study: Assembly Configurations
- Creating Configurations Manually
- Configuration Properties
- Using the Modify Configurations Dialog
- Changing Configurations using the Context Toolbar
- Case Study: Hole Alignment
- Controlling Dimensions in an Assembly
- Creating an Equality
- Equations with Functions
- Comments
- Sensors
- Using the Mate Controller
- Assembly Evaluation Tools

**Lesson 6: Display States and Appearances**

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

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**ASSEMBLY MODELING**

Key Topics

**Day 3**

**Lesson 7: Large Assemblies**

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

**Lesson 8: Facility Layout**

- Facility Layout
- Publishing an Asset
- Using Magnetic Mates
- Modelling Connection Point Geometry

**Lesson 8: Using SOLIDWORKS Treehouse**

- SOLIDWORKS Treehouse
- Setting Treehouse Instances
- Exporting Treehouse Data

**Lesson 9: Layout-based Assembly Design**

- Layout-based Assembly Design
- Key Topics
- Case Study: Clamp
- Blocks
- Inserting Blocks
- Creating a Part from a Block
- Gear and Pulley Motion in Blocks
- Case Study: Gears and Pulleys

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