



Who should attend:

**R&D Engineer
Product
Designer/Engineer**

Prerequisites:

Attended SOLIDWORKS Essentials Course

Mechanical Design Experience

Duration:

3 Days

Methodology:

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

Introduction

This course is designed to make SOLIDWORKS users productive more quickly with SOLIDWORKS Simulation software. This course provides an in-depth coverage on the basics of Finite Element Analysis (FEA), covering the entire analysis process from meshing to evaluation of results for parts and assemblies. The class discusses linear stress analysis, gap/contact analysis, and best practices.

Objective

At the end of this program participants are expected to:

- Create better designs by performing analysis and evaluating the behavior of your parts and assemblies under actual service conditions.

IME CADCAM TRAINING CENTRE SDN BHD

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SIMULATION BASIC

Key Topics

Day 1

Course Outline:

Lesson 1: The Analysis Process

- The Analysis Process
- Case Study: Stress in a Plate
- Project Description
- SOLIDWORKS Simulation Options
- Preprocessing
- Meshing
- Postprocessing
- Multiple Studies
- Reports

Lesson 2: Mesh Controls, Stress Concentrations and Boundary Conditions

- Mesh Control
- Case Study: The L Bracket
- Project Description
- Case Study: Analysis of Bracket with a Fillet
- Case Study: Analysis of a Welded Bracket
- Understanding the Effect of Boundary Conditions

Lesson 3: Assembly Analysis with Contacts

- Contact Analysis
- Case Study: Pliers with Global Contact
- Pliers with Local Contact

Lesson 4: Symmetrical and Free Self-Equilibrating Assemblies

- Shrink Fit Parts
- Case Study: Shrink Fit
- Project Description
- Analysis with Soft Springs

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SIMULATION BASIC

Key Topics

Day 2

Lesson 5 : Assembly Analysis with Connectors and Mesh Refinement

- Connecting Components
- Connectors
- Mesh Control in an Assembly
- Case Study: Cardan Joint
- Problem Statement
- Part 1: Draft Quality Coarse Mesh Analysis
- Part 2: High Quality Mesh Analysis

Lesson 6: Compatible/Incompatible Meshes

- Compatible / Incompatible Meshing
- Case Study: Roto

Lesson 7: Analysis of Thin Components

- Thin Components
- Case Study: Pulley
- Part 1: Mesh with Solid Elements
- Part 2: Refined Solid Mesh
- Solid vs. Shell
- Creating Shell Elements
- Part 3: Shell Elements - Mid-plane Surface
- Results Comparison
- Case Study: Joist Hanger

Lesson 8: Mixed Meshing Shells & Solids

- Mixed Meshing Solids and Shells
- Case Study: Pressure Vessel

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SIMULATION BASIC

Key Topics

Day 3

Lesson 9 : Beam Elements – Analysis of a Conveyor Frame

- Project Description

Lesson 10: Mixed Meshing Solids, Beams & Shells

- Mixed Meshing
- Case Study: Particle Separator
- Beam Imprint

Lesson 11: Design Study

- Case Study: Suspension Design
- Part 1: Multiple Load Cases
- Part 2: Geometry Modification

Lesson 12: Thermal Stress Analysis

- Thermal Stress Analysis
- Case Study: Bimetallic Strip

Lesson 13: Adaptive Meshing

- Adaptive Meshing
- Case Study: Support Bracket
- h-Adaptivity Study
- p-Adaptivity Study
- h vs. p Elements - Summary

Lesson 14: Large Displacement Analysis

- Small vs. Large Displacement Analysis
- Case Study: Clamp
- Part 1: Small Displacement Linear Analysis
- Part 2: Large Displacement Nonlinear Analysis

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