



SOLIDWORKS SIMULATION PROFESSIONAL

Who should attend:

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

Prerequisites:

Attended

- SOLIDWORKS Essentials Course
- SOLIDWORKS Simulation Basic

Mechanical Design
Experience

Duration:

2 Days

Methodology:

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

Introduction

This course is designed to make SOLIDWORKS Simulation users productive with the SOLIDWORKS Simulation Professional extension. This 1 day course will provide an in-depth coverage on the advanced topics in Finite Element Analysis (FEA) including heat transfer analysis, frequency analysis, fatigue, stability analysis based on the linear buckling concepts, 2D simulations (plane stress, strain and axisymmetry) and pressure vessel modulus. Example or parts and assemblies including those with various gap/contact conditions are reviewed.

Objective

At the end of this program participants are expected to:

- Learn to conduct different advanced FEA analysis such as frequency, buckling, thermal, drop test, optimization and fatigue studies.
- Using industrial case studies such as microchip device, press frame assembly, students will learn the common workflow to define the different analysis studies.
- Learn to interpret the different result plots and evaluate the product design.

IME CADCAM TRAINING CENTRE SDN BHD

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Key Topics

Day 1

Course Outline:

Lesson 1: Frequency Analysis of Parts

- Modal Analysis Basics
- Case Study: The Tuning Fork
- Project Description
- Frequency Analysis With & without Supports
- Frequency Analysis with Load

Lesson 2: Frequency Analysis of Assemblies

- Case Study: The Engine Mount
- Project Description
- All Bonded Contact Conditions
- Bonded and Allow Penetration Contacts

Lesson 3: Buckling Analysis

- Buckling Analysis
- Case Study: Particle Separator
- Project Description

Lesson 4: Load Cases

- Load Cases
- Case Study: Scaffolding

Lesson 5: Submodeling

- Submodeling
- Case Study: Scaffolding
- Part 1: Parent Study
- Part 2: Child Study

Lesson 6: Topology Analysis

- Topology Analysis
- Case Study: Rear Bike Shock Link
- Project Description
- Goals and Constraints
- Manufacturing Controls
- Mesh Effects
- Load Cases in Topology Studies
- Export Smoothed Mesh

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Key Topics

Day 2

Lesson 7 : Thermal Analysis

- Thermal Analysis Basics
- Case Study: Microchip Assembly
- Project Description
- Steady-State Thermal Analysis
- Transient Thermal Analysis
- Transient Analysis with Time Varying Load
- Transient Thermal Analysis using a Thermostat

Lesson 8: Thermal Analysis with Radiation

- Case Study: Spot Light Assembly
- Project Description
- Steady State Analysis

Lesson 9: Advanced Thermal Stress2D Simplification

- Thermal Stress Analysis
- Case Study: Metal Expansion Joint
- Project Description
- Thermal Analysis
- Thermal Stress Analysis
- 3D model

Lesson 10: Fatigue Analysis

- Fatigue
- Stress-life (S-N) Based Fatigue
- Case Study: Pressure Vessel
- Thermal Study
- Fatigue Terminology
- Fatigue Study
- Fatigue Study with Dead Load

Lesson 11: Variable Amplitude Fatigue

- Case Study: Suspension
- Project Description
- Fatigue Study

Lesson 12: Drop Test Analysis

- Drop Test Analysis
- Case Study: Camera
- Project Description
- Rigid Floor Drop Test
- Elastic Floor, Elasto-Plastic Material
- Elasto-Plastic Material Model

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Key Topics

Lesson13 : Optimization Analysis

- Optimization Analysis
- Case Study: Press Frame.
- Project Description

- Static and Frequency Analyses
- Optimization Analysis
- Design Study

Lesson 14: Pressure Vessel Analysis

- Case Study: Pressure Vessel
- Project Description
- Pressure Vessel Analysis

- Manhole Nozzle Flange and Cover

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