

SOLIDWORKS Simulation Professional Course Outline

 DURATION/TIME 2 Days 9:00 am - 5:00 pm	 METHODOLOGY Practical hands-on with using computers, lecturing, discussions and case studies.
 PREREQUISITES Experience with the Windows™ Operating System. Attended SOLIDWORKS Essentials and Simulation course. Knowledge of basic mechanical engineering concepts.	 TARGET Application Engineer, R&D Engineer, Product Designer or Engineer, and Industrial Engineer

INTRODUCTION

This course is designed to make SOLIDWORKS Simulation users productive with the SOLIDWORKS Simulation Professional extension. This 2-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.
- Understand and apply common workflow to define the different analysis studies.
- Learn to interpret the different result plots and evaluate the product design

CONTACT

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SOLIDWORKS Simulation Professional

DAY 1

Course Outline:

Lesson 1: Frequency Analysis of Parts

- Objectives
- Model Analysis Basics
- Case Study: The Tuning Fork
- Project Description
- Frequency Analysis with Supports
- Frequency Analysis without Supports
- Frequency Analysis with Load
- Summary
- Questions

Lesson 2: Frequency Analysis of Assemblies

- Objectives
- Case Study: The Engine Mount
- Project Description
- All Bonded Interaction Conditions
- Bonded and Free Interaction
- Summary
- Questions

Lesson 3: Buckling Analysis

- Objectives
- Buckling Analysis
- Case Study: Particle Separator
- Project Description
- Summary
- Questions

Lesson 4: Load Cases

- Objectives
- Load Cases
- Case Study: Scaffolding
- Summary

Lesson 5: Submodeling

- Objectives
- Submodeling
- Case Study: Scaffolding
- Part 1: Parent Study
- Part 2: Child Study
- Summary
- Questions

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DAY 1

Course Outline:

Lesson 6: Topology Analysis

- Objectives
- 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
- Summary

Lesson 7: Thermal Analysis

- Objectives
- 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
- Summary
- Question

Lesson 8: Thermal Analysis with Radiation

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

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DAY 2

Course Outline:

Lesson 9: Advanced Thermal Stress 2D Simplification

- Objectives
- Thermal Stress Analysis
- Case Study: Metal Expansion Joint
- Project Description
- Thermal Analysis
- Thermal Stress Analysis
- 3D Model
- Summary
- Questions
- Microchip Testing Assembly
- Summary
- Thermoelectric Cooler

Lesson 10: Fatigue Analysis

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

Lesson 11: Variable Amplitude Fatigue

- Objectives
- Case Study: Suspension
- Project Description
- Fatigue Study
- Summary
- Questions

Lesson 12: Drop Test Analysis

- Objectives
- Drop Test Analysis
- Case Study: Camera
- Project Description
- Rigid Floor Drop Test
- Elastic Floor, Elasto-Plastic Material
- Elasto-Plastic Material Model
- Drop Test with Contact interaction
- Summary

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Day 2

Course Outline:

Lesson 13: Optimization Analysis

- Objectives
- Optimization Analysis
- Case Study: Press Frame
- Project Description
- Static and Frequency Analysis
- Optimization Analysis
- Design Study
- Summary

Lesson 14: Pressure Vessel Analysis

- Objectives
- Case Study: Pressure Vessel
- Project Description
- Pressure Vessel Analysis
- Manhole Nozzle Flange and Cover
- Summary

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