

SOLIDWORKS Simulation Course Outline

 DURATION/TIME 3 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. Knowledge of SOLIDWORKS. 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 users productive more quickly with the SOLIDWORKS Simulation Bundle. This course will provide 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 conditions.

CONTACT

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SOLIDWORKS Simulation

DAY 1

Course Outline:

Lesson 1: The Analysis Process

- Objectives
- The Analysis Process
- Case Study: Stress in a Plate
- SOLIDWORKS Simulation Options
- Preprocessing
- Meshing
- Processing
- Postprocessing
- Multiple Studies
- Reports
- Summary
- References
- Questions

Lesson 2: Mesh Controls, Stress Concentrations and Boundary Conditions

- Objectives
- 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
- Summary
- Questions

Lesson 3: Assembly Analysis with Interactions

- Objectives
- Interaction Analysis
- Case Study: Pliers with Global Interaction
- Study Properties
- Contact or Bonded Interaction
- Pliers with Local Interaction
- Summary
- Questions

Lesson 4: Symmetrical and Free Self-Equilibrating Assemblies

- Objectives
- Shrink Fit Parts
- Case Study: Shrink Fit
- Project Description
- Analysis with Soft Spring
- Summary

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DAY 2

Course Outline:

Lesson 5: Assembly Analysis with Connectors and Mesh Refinement

- Objectives
- Case Study: Cardan Joint
- Problem Statement
- Remote Load/Mass
- Connectors
- Mesh Control in an Assembly
- Mesh Plots
- Summary
- Bearings

Lesson 6: Bonded Mesh Options

- Objectives
- Bonded Mesh Options
- Case Study: Rotor
- Centrifugal Force
- Cyclical Symmetry
- Bonding Options
- Bonding Formulation
- Summary

Lesson 7: Analysis of Thin Components

- Objectives
- 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
- Convergence Check Plot
- Summary
- Questions

Lesson 8: Mixed Meshing Shells & Solids

- Objectives
- Mixed Meshing Solids and Shells
- Case Study: Pressure Vessel
- Summary
- Questions
- Simulation Evaluator

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DAY 3

Course Outline:

Lesson 9: Beam Elements – Analysis of a Conveyor Frame

- Objectives
- Project Description
- Summary
- Questions

Lesson 10: Mixed Meshing Solids, Beams & Shells

- Objectives
- Mixed Meshing
- Case Study: Particle Separator
- Beat Imprint
- Summary

Lesson 11: Design Study

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

Lesson 12: Thermal Stress Analysis

- Objectives
- Thermal Stress Analysis
- Case Study: Bimetallic Strip
- Saving Model in its Deformed Shape
- Summary

Lesson 13: Adaptive Meshing

- Objectives
- Adaptive Meshing
- Case Study: Support Bracket
- h-Adaptive Study
- p-Adaptive Study
- h vs. p Elements – Summary
- Summary
- Unique Load Profiles
- Relevant Results
- Adaptive Meshing Constraints

Lesson 14: Large Displacement Analysis

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

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