



Duration: 3 Days

Prerequisites:

- Knowledge of SOLIDWORKS and basic mechanical engineering concepts is recommended.

Course Outline

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.

The main topics covered include:

Lesson 1: The Analysis Process

- Objectives
- The Analysis Process
- Project Description
- SOLIDWORKS Simulation Options
- Preprocessing
- Meshing
- Postprocessing
- Multiple Studies

Lesson 2: Mesh Controls, Stress Concentrations and Boundary Conditions

- Mesh Control
- Project Description
- Understanding the Effect of Boundary Conditions

Lesson 3: Assembly Analysis with Contacts

- Contact Analysis
- Pliers with Local Contact

Lesson 4: Symmetrical and Free Self-Equilibrating Assemblies

- Shrink Fit Parts
- Project Description
- Analysis with Soft Springs

Lesson 5: Assembly Analysis with Connectors and Mesh Refinement

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

Lesson 5: Assembly Analysis with Connectors and Mesh Refinement

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

Lesson 6: Compatible/Incompatible Meshes

- Compatible / Incompatible Meshing

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

Lesson 8: Mixed Meshing Shells & Solids

- Mixed Meshing Solids and Shells

Lesson 9: Mixed Meshing Solids, Beams & Shells

- Mixed Meshing
- Beam imprint

Lesson 10: Submodeling

- Submodeling Basics
- Part 1: Parent Study
- Part 2: Child Study

Lesson 10: Submodeling

- Submodeling Basics
- Part 1: Parent Study
- Part 2: Child Study

Lesson 11: Design Study

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

Lesson 12: Thermal Stress Analysis

- Thermal Stress Analysis
- Examining Results in Local Coordinate Systems
- Saving Model in its Deformed Shape

Lesson 13: Adaptive Meshing

- Adaptive Meshing
- h-Adaptivity Study
- p-Adaptivity Study
- h vs. p Elements - Summary

Lesson 14: Large Displacement Analysis

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

Lesson 15: Meshing, Solvers, and Tips & Tricks

- Meshing Strategies
- Geometry Preparation
- Mesh Quality
- Mesh Controls
- Meshing Stages
- Failure Diagnostics
- Tips for Using Shell Elements
- Hardware Considerations in Meshing

Please do not hesitate to contact us for registration and further information

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