

Certified SolidWorks Simulation – 3 days

Description	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.
Prerequisites	Certified SolidWorks Essentials – Part & Assembly Modelling

<p>Introduction What is SolidWorks Simulation? What Is Finite Element Analysis? Build Mathematical Model Build Finite Element Model Solve Finite Element Model Analyse Result Errors in FEA Finite Elements Degrees of Freedom Calculations in FEA Interpretation of FEA Results Units of Measurement Limitations of SolidWorks Simulation</p> <p>Lesson 1: The Analysis Process The Analysis Process Case Study: Stress in a Plate Project Description SolidWorks Simulation Options Pre-processing Meshing Post processing Multiple Studies Reports</p> <p>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</p> <p>Lesson 3: Assembly Analysis with Contacts Contact Analysis Case Study: Pliers with Global Contact Pliers with Local Contact</p>	<p>Lesson 4: Symmetrical and Free Self-Equilibrating Assemblies Shrink Fit Parts Case Study: Shrink Fit Project Description Analysis with Soft Springs</p> <p>Lesson 5: Assembly Analysis with Connectors Connecting Components Connectors Case Study: Vice Grip Pliers</p> <p>Lesson 6: Compatible/Incompatible Meshes Compatible / Incompatible Meshing Case Study: Rotor</p> <p>Lesson 7: Assembly Analysis Mesh Refinement Mesh Control in an Assembly Case Study: Cardan Joint Problem Statement Part 1: Draft Quality Coarse Mesh Analysis Part 2: High Quality Mesh Analysis</p> <p>Lesson 8: 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</p> <p>Lesson 9: Mixed Meshing Shells & Solids Mixed Meshing Solids and Shells Case Study: Pressure Vessel</p>	<p>Lesson 10: Mixed Meshing Solids, Beams & Shells Mixed Meshing Case Study: Particle Separator</p> <p>Lesson 11: Design Scenarios Design Study Case Study: Suspension Design Part 1: Multiple Load Cases Part 2: Geometry Modification</p> <p>Lesson 12: Thermal Stress Analysis Thermal Stress Analysis Case Study: Bimetallic Strip Examining Results in Local Coordinate Systems Saving Model in its Deformed Shape</p> <p>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</p> <p>Appendix A: 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 Solvers in SolidWorks Simulation Choosing a Solver</p>
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