

**SolidWorks Simulation Essentials – 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	SolidWorks Essentials – Part & Assembly Modelling

<p><b>Introduction</b>                  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><b>Lesson 1: The Analysis Process</b>                  The Analysis Process                  Case Study: Stress in a Plate                  Project Description                  SolidWorks Simulation Options                  Pre-processing                  Meshing                  Processing                  Post processing                  Multiple Studies                  Reports</p> <p><b>Lesson 2: Mesh Controls, Stress Concentrations and Boundary Conditions</b>                  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><b>Lesson 3: Assembly Analysis with Contacts</b>                  Contact Analysis                  Case Study: Pliers with Global Contact                  No Penetration or Bonded Contact                  Pliers with Local Contact                  No Penetration Local Contact:                  Accuracy</p>	<p><b>Lesson 4: Symmetrical and Free Self-Equilibrating Assemblies</b>                  Shrink Fit Parts                  Case Study: Shrink Fit                  Project Description                  Analysis with Soft Springs</p> <p><b>Lesson 5: Assembly Analysis with Connectors</b>                  Connecting Components                  Connectors                  Mesh Control in an Assembly                  Case Study: Cardan Joint                  Problem Statement                  Part 1: Draft Quality Coarse Mesh Analysis                  Remote Load/Mass                  Part 2: High Quality Mesh Analysis</p> <p><b>Lesson 6: Compatible/Incompatible Meshes</b>                  Compatible / Incompatible Meshing                  Case Study: Rotor                  Centrifugal Force                  Cyclical Symmetry</p> <p><b>Lesson 8: Analysis of Thin Components</b>                  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><b>Lesson 8: Mixed Meshing Shells &amp; Solids</b>                  Mixed Meshing Solids and Shells                  Case Study: Pressure Vessel</p> <p><b>Lesson 9: Beam Elements – Analysis of a Conveyor Frame</b>                  Project Description</p>	<p><b>Lesson 10: Mixed Meshing Solids, Beams &amp; Shells</b>                  Mixed Meshing                  Case Study: Particle Separator                  Beam Imprint</p> <p><b>Lesson 11: Design Study</b>                  Design Study                  Case Study: Suspension Design                  Part 1: Multiple Load Cases                  Part 2: Geometry Modification</p> <p><b>Lesson 12: Thermal Stress Analysis</b>                  Thermal Stress Analysis                  Case Study: Bimetallic Strip                  Examining Results in Local Coordinate Systems                  Saving Model in its Deformed Shape</p> <p><b>Lesson 13: Adaptive Meshing</b>                  Adaptive Meshing                  Case Study: Support Bracket                  h-Adaptivity Study                  p-Adaptivity Study                  h vs. p Elements – Summary</p> <p><b>Lesson 14: Large Displacement Analysis</b>                  Small vs. Large Displacement Analysis                  Case Study: Clamp                  Part 1: Small Displacement Linear Analysis                  Part 2: Large Displacement Nonlinear Analysis</p> <p><b>Appendix A: Meshing, Solvers, and Tips &amp; Tricks</b>                  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                  Email Notification Settings</p>
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To Book call: 1300 SWX CAD (1300 799 223)

