



**SOLIDWORKS SIMULATION: NONLINEAR**

PREREQUISITES	LENGTH	DESCRIPTION
<ul style="list-style-type: none"> <li>■ SolidWorks Simulation Essentials required or must have an experience with SOLIDWORKS. Basic knowledge of finite elements and of basic mechanical principles recommended.</li> </ul> <p>► <b>LARGE DISPLACEMENT ANALYSIS</b></p> <ul style="list-style-type: none"> <li>■ Case Study: Hose Clamp</li> <li>■ Linear Static Analysis</li> <li>■ Geometrically Linear Analysis: Limitations</li> <li>■ Nonlinear Static Study</li> <li>■ Advanced Options: Step/Tolerance Options</li> <li>■ Linear Static Study (Large Displacement)</li> </ul> <p>► <b>INCREMENTAL CONTROL TECHNIQUES</b></p> <ul style="list-style-type: none"> <li>■ Incremental Control Techniques</li> <li>■ Case Study: Trampoline</li> <li>■ Linear Analysis</li> <li>■ Nonlinear Analysis - Force Control</li> <li>■ Nonlinear Analysis - Displacement Control</li> </ul> <p>► <b>NONLINEAR STATIC BUCKLING ANALYSIS</b></p> <ul style="list-style-type: none"> <li>■ Case Study: Cylindrical Shell</li> <li>■ Linear Buckling</li> <li>■ Nonlinear Symmetrical Buckling</li> <li>■ Nonlinear Asymmetrical Buckling</li> <li>■ Exercise 1: Nonlinear Analysis of a Shelf</li> <li>■ Exercise 2: Nonlinear Analysis of Remote Control Button</li> </ul> <p>► <b>PLASTIC DEFORMATION</b></p> <ul style="list-style-type: none"> <li>■ Case Study: Paper Clip</li> <li>■ Linear Elastic</li> <li>■ Nonlinear - von Mises and Nonlinear -Tresca's</li> <li>■ Exercise 3: Stress Analysis of a Beam Using Nonlinear</li> <li>■ Exercise 4: Oil Well Pipe Connection</li> </ul>	<p>2 Days</p>	<ul style="list-style-type: none"> <li>■ This course is designed for users who would like to become productive fast, the nonlinear course offers hands-on experience on the use of SOLIDWORKS Simulation nonlinear module. The two-day course provides an overview on a wide range of nonlinear structural/mechanical analysis topics.</li> </ul> <p>► <b>HARDENING RULES</b></p> <ul style="list-style-type: none"> <li>■ Hardening Rules</li> <li>■ Case Study: Crank Arm</li> <li>■ Isotropic Hardening</li> <li>■ Kinematic Hardening</li> </ul> <p>► <b>ANALYSIS OF ELASTOMERS</b></p> <ul style="list-style-type: none"> <li>■ Case Study: Rubber Pipe</li> <li>■ 2 Constant Mooney-Rivlin (1, 2 and 3 Material Curves)</li> <li>■ 6 Constant Mooney-Rivlin (3 Material Curves)</li> <li>■ Exercise 5: Analysis of seal</li> </ul> <p>► <b>NONLINEAR CONTACT ANALYSIS</b></p> <ul style="list-style-type: none"> <li>■ Case Study: Rubber Tube</li> <li>■ Instability in Assemblies</li> <li>■ Releasing Prescribed Displacement</li> <li>■ Validity and Limitations of Static Analysis</li> <li>■ Exercise 6: Gear Assembly</li> <li>■ Exercise 7: Ring</li> </ul> <p>► <b>METAL FORMING</b></p> <ul style="list-style-type: none"> <li>■ Bending</li> <li>■ Case Study: Sheet Bending</li> <li>■ Plane Strain</li> <li>■ Large Strain Formulation Option</li> <li>■ Automatic Stepping Problems</li> <li>■ Small Strain Vs. Large Strain Formulations</li> <li>■ Exercise 8: Large strain contact simulation - Flanging</li> </ul>