Simulation Premium Training Course

Course Duration: 2 days

This class will raise your SolidWorks Simulation FEA skills to the next level! It offers hands-on experience on the use of SolidWorks Simulation Premium nonlinear module. The 2-day course provides an overview on a wide range of non-linear structural/mechanical analysis topics. You will learn how to deal with models that exhibit large displacements and/or yielding, discuss and practice the use of many material models available in SolidWorks Simulation and, most importantly, how to drive a non-linear analysis to successful completion.

Prerequisites: Must have attended the basic SolidWorks Simulation class, or must have an experience with SolidWorks + working basic knowledge of finite elements and of basic mechanical principles

Who should attend: 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.

Geometric Nonlinearities

- Large displacements problems
- Large strain formulation

Material Nonlinearities

- Nonlinear elasticity
- Hyperelasticity (Mooney-Rivlin, Ogden)
- Plasticity (von Mises, isotropic/kinematic/mixed hardening rules)
- Temperature dependent material properties
- Visco-elasticity and creep

Contact (Boundary) Nonlinearities

- 3D nonlinear gap/contact analysis (with or without material nonlinearities).

Numerical Procedures

- Solution control techniques (force, displacement, and Arc-Length controls)
- Equilibrium Iterations schemes (Newton-Raphson, modified Newton-Raphson)
- Termination schemes (convergence and divergence criteria)

Special Topics

- Adaptive automatic stepping algorithm
- Prescribed non-zero displacements associated with time curves
- Deformation dependent loading
- Analysis stabilization techniques

Viewing the Results

- Deflected shape plots
- Displacement and stress colour filled contour plots
- Animation of deflected shape, displacement, and stress contour plots
- X-Y plots for response quantities Isoplanes and sectioning

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SolidWorks 3D Solutions

Contact Details

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Simulation Premium: Dynamics Training Course

Course Duration: 2 days

This course is targeted for the users who would like to become productive in analyzing structures subjected to various types of dynamic loading. The material covered includes the time dependent analysis(force loads as well as motion shock loading examples), harmonic analysis and random vibration analysis (MILS-STD-810F example is included), response spectrum analysis, and introduction to nonlinear dynamics simulation.

Prerequisites: Must have attended the basic SolidWorks Simulation class, or must have an experience with SolidWorks + working basic knowledge of finite elements and of basic mechanical principles. The knowledge of basic principles in Vibrations is strongly recommended, but not required.

Who should attend: Designed for users who would like to become productive fast, the advanced course offers hands-on experience on the use of SolidWorks Simulation Dynamics modules. The one-day course provides an overview on a wide range of dynamic analysis topics.

Analyses Covered

- Modal time history analysis
- Steady-state harmonic analysis
- Random vibration
- Response spectrum analysis
- Introduction to nonlinear dynamic simulation

Damping

- Rayleigh damping, modal damping, composite damping

Excitation

- Load vs. time data for nodal forces, pressure loads
- Uniform and nonuniform base excitations in the time or frequency domain for displacement, velocity and acceleration
- Harmonic excitation for nodal forces, pressure loads, uniform and nonuniform ground motions and varied phase angles
- Power spectral density (PSD) excitation curves for nodal forces, pressure loads, uniform and nonuniform ground motions
- Response spectrum analysis (SRS and VRS) excitation for uniform base motion

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