



MLC CAD Systems

SolidWorks Simulation: Non-Linear 2010

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Orlando, FL

866-966-1652 Toll Free
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Stillwater, OK

866-364-4652 Toll Free
405-742-4653 Fax

Length: 2 days

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

Description: 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. This course provides an overview on a wide range of nonlinear 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.

TOPICS COVERED:

Material Nonlinearities

- **Nonlinear elasticity**
- **Hyperelasticity (Mooney-Rivlin, Ogden)**
- **Plasticity (von Mises, isotropic/kinematic/mixed hardening rules)**
- **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 color filled contour plots**
- **Animation of deflected shape, displacement, and stress contour plots**
- **X-Y plots for response quantities Isoplanes and sectioning**

