



MLC CAD Systems

SolidWorks Simulation Professional 2010

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Length: 2 days

Prerequisites: Students must have attended the introductory SolidWorks Simulation course or must have working knowledge of the SolidWorks Simulation software. Knowledge of SolidWorks and basic mechanical engineering concepts is recommended.

Description: This course is designed to make SolidWorks Simulation users productive with the SolidWorks Simulation Professional extension. This course will provide an in-depth coverage on the advanced topics in Finite Element Analysis (FEA) including heat transfer analysis, frequency analysis, fatigue, stability analysis based on the linear buckling concepts, and pressure vessel modulus. Example or parts and assemblies including those with various gap/contact conditions are reviewed.

Introduction

What is SolidWorks Simulation?
Limitations of SolidWorks Simulation Professional

Lesson 1: Frequency Analysis of Parts

Objectives
Modal Analysis Basics
Case Study: The Tuning Fork
Project Description
Frequency Analysis With Supports
Frequency Analysis Without Supports
Frequency Analysis with Load

Lesson 2: Frequency Analysis of Assemblies

Objectives
Case Study: The Engine Mount
Project Description
All Bonded Contact Conditions
Bonded and Free Contact Conditions

Lesson 3: Buckling Analysis

Objectives
Buckling Analysis
Case Study: Particle Separator

Lesson 4: Thermal Analysis

Objectives
Thermal Analysis Basics
Case Study: Microchip Assembly
Steady-State Thermal Analysis
Transient Thermal Analysis
Transient Analysis with Time Varying Load
Transient Thermal Analysis using a Thermostat

Lesson 5: Thermal Analysis with Radiation

Case Study: Spot Light Assembly
Project Description
Steady State Analysis
Full Radiation Conditions

Lesson 6: Advanced Thermal Stress Analysis

Thermal Stress Analysis
Case Study: Microchip Testing Assembly
Thermal Analysis
Thermal Stress Analysis

Lesson 7: Fatigue Analysis

Fatigue
Stress-life (S-N) Based Fatigue
Case Study: Pressure Vessel
Thermal Stress Study
Fatigue Terminology
Fatigue Study
Fatigue study with dead load

Lesson 8: Advanced Fatigue Analysis

Objectives
Case Study: Suspension
Fatigue Study

Lesson 9: Drop Test Analysis

Objectives
Drop Test Analysis
Case Study: Camera
Project Description
Rigid Floor Drop Test
Elastic Floor Drop Test
Elasto-Plastic Material Model
Drop Test with Contact

Lesson 10: Optimization Analysis

Objectives
Optimization Analysis
Case Study: Press Frame
Project Description
Static and Frequency Analyses
Optimization Analysis
Design Study

Lesson 11: Pressure Vessel Analysis

Objectives
Case Study: Pressure Vessel
Pressure Vessel Analysis
Manhole Nozzle Flange and Cover

