SOLIDUNIVERSITY
Training Curriculum

SOLIDWORKS MOTION SIMULATION

Pre-Requisites: Knowledge of SOLIDWORKS and basic mechanical engineering concepts is recommended.

Daily Schedule: 8:30 a.m. - 4:30 p.m.

Length: 2 Days

Designed for users who would like to become productive quickly in using SOLIDWORKS Motion. This course will teach you how to use the SOLIDWORKS Motion simulation package to study the kinematics and dynamic behavior of your SOLIDWORKS assembly models.

The course provides both essential and advanced sessions on the basics of building, simulating and refining a mechanical design system, from suspension steering system and drive shafts to backhoes, CAMS, Gears, and Actuators.

Introduction: Fundamentals of Motion Simulation

- » About this Course
- » What is SOLIDWORKS Motion?
- » Mass and Inertia
- » Degrees-of-Freedom
- » Kinematic Analysis
- » Basics of Mechanism Setup

Lesson 1: Intro to Kinematic Analysis

- » Objectives
- » Case Study: Car Jack Analysis
- » Forces
- » Post-Processing/Results

### Lesson 2: Building a Kinematic Model and Post-Processing

- » Objectives
- » Case Study: Crank Slider Analysis
- » Mates
- » Local Mates
- » Power
- » Plotting Kinematic Results

Lesson 3: Intro to Contacts, Springs, and Dampers

- » Objectives
- » Contact and Friction
- » Case Study: Catapult
- » Contact
- » Contact Groups
- » Contact Friction
- » Translational Spring
- » Translational Damper

Lesson 4: Advanced Contact

- » Objectives
- » Contact Forces
- » Case Study: Latching Assembly
- » STEP Function
- » Contact: Solid Bodies
- » Precise Contact
- » Integrators

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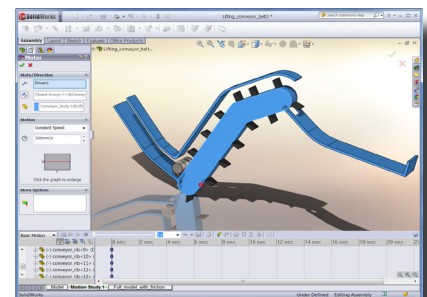
SOLIDWORKS MOTION SIMULATION

Lesson 5: Curve to Curve Contact

- » Objectives
- » Contact Forces
- » Case Study: Geneva Mechanism
- » Curve to Curve Contact
- » Solid Bodies vs. Curve to Curve Contact
- » Solid Bodies Contact Solution

Lesson 6: CAM Synthesis

- » Objectives
- » CAMs
- » Case Study: CAM Synthesis
- » Trace Path
- » Exporting Trace Path Curves

Lesson 7: Motion Optimization

- » Objectives
- » Motion Optimization
- » Case Study: Medical Examination Chair
- » Sensors
- » Optimization Analysis

Lesson 8: Flexible Joints

- » Objectives
- » Flexible Joints
- » Case Study: System with Rigid Joints
- » System with Flexible Joints

Lesson 9: Redundancies

- » Objectives
- » Redundancies
- » Case Study: Door Hinges
- » Checking for Redundancies
- » Redundant Mechanisms

Lesson 10: Export to FEA

- » Objectives
- » Exporting Results
- » Case Study: Drive Shaft
- » Export of Loads
- » Direct Solution in SOLIDWORKS Motion

Lesson 11: Event Based Simulation

- » Objectives
- » Event Based Simulation
- » Case Study: Sorting Device
- » Servo Motors
- » Sensors