SOLIDWORKS Motion

**Length**: 2 days

**Prerequisite**: SOLIDWORKS Essentials and experience with the MotionManager.

**Description**: SOLIDWORKS Motion teaches you how to use the SOLIDWORKS Motion simulation package to study the kinematics and dynamic behavior of your SolidWorks assembly models.

The topics covered in this course are:

**Introduction**
About This Course
More SOLIDWORKS Training Resources
What is SOLIDWORKS Motion?
Understanding Basics
Basics of Mechanism Setup in SOLIDWORKS Motion
Summary

**Lesson 1: Introduction to Motion Simulation and Forces**
Objectives
Basic Motion Analysis
Case Study: Car Jack Analysis
Forces
Results

**Lesson 2: Building a Motion Model and Post-processing**
Objectives
Creating Local Mates
Case Study: Crank Slider Analysis
Mates
Local Mates
Power
Plotting Kinematic Results
Summary

**Lesson 3: Introduction to Contacts, Springs and Dampers**
Objectives
Contact and Friction
Case Study: Catapult
Contact
Contact groups
Contact Friction
Translational Spring
Translational Damper
Post-processing
Lesson 4: Advanced Contact
Objectives
Contact Forces
Case Study: Latching Assembly
STEP Function
Contact: Solid Bodies
Geometrical Description of Contacts
Integrators
Instability Points
Modifying Result Plots
Summary
Path Mate Motor

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
Summary

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
Summary
References

**Lesson 9: Redundancies**

Objectives
Redundancies
Case Study: Door Hinges
How to Check for Redundancies
Typical Redundant Mechanisms
Summary

**Lesson 10: Export to FEA**

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

**Lesson 11: Event Based Simulation**

Objectives
Event Based Simulation
Case Study: Sorting Device
Servo motors
Sensors
Task

**Lesson 12: Design Project**

Objectives
Design Project
Case Study: Surgical Shear – Part 1
Self Guided Problem – Part 1
Self Guided Problem – Part 2
Problem Solution – Part 1
Creating the Force Function
Force Expression
Case Study: Surgical Shear – Part 2
Summary

**Appendix A: Motion Study Convergence Solutions and Advanced Options**

Convergence
Accuracy
Integrator Type
Integrator Settings
Conclusion
Appendix B: Mate Friction

Mate Friction