SOLIDWORKS Motion
Course Outline

DURATION/TIME

2 Days

9:00 am - 5:00 pm

METHODOLOGY

Practical hands-on with using computers, lecturing, discussions and case studies.

PREREQUISITES

Experience with the Windows™ Operating System.
Basic knowledge of SOLIDWORKS.
Knowledge of basic mechanical engineering concepts.

TARGET

Application Engineer, R&D Engineer, Product Designer or Engineer, and Industrial Engineer

INTRODUCTION

Designed for users who would like to become productive quickly in using SOLIDWORKS Motion. This 2-day course will teach you how to use the SOLIDWORKS Motion simulation package to study the kinematics and dynamic behavior of your SOLIDWORKS assembly models.

OBJECTIVE

At the end of this program participants are expected to:

- Understand the basics of using SOLIDWORKS Motion.
- Able to analyze the kinematic or dynamic behavior of SOLIDWORKS assembly models.

CONTACT

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SOLIDWORKS Motion

DAY 1

Course Outline:

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
- Analysis with Friction (Optional)
- Summary

Lesson 4: Advanced Contact

- Objectives
- Latch Forces
- Case Study: Trailer Hitch
- STEP Function
- Contact: Solid Bodies
- Geometrical Description of Contacts
- Integrators
- 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

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DAY 2

Course Outline:

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 Mechanism
- Summary

Lesson 10: Export to FEA

- Objectives
- Exporting Results
- Case Study: Drive shaft
- Export of Loads
- Direct Solutions 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 (Optional)

- 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