SolidWorks Motion

Prerequisites	Length	Description
Knowledge of SolidWorks and the basics of the MotionManager are required.	2 Days	This course has been designed for new SolidWorks Motion users who would like to learn to perform motion analysis on their designs. The course provides an in-depth session on the basics of building, simulating and refining a mechanical design system.

Basics
- Mass and Inertia
- Constraining Degrees-of-Freedom (DOF)
- Motion Analysis
- Basic's of Mechanism Setup (Rigid Body, Fixed Parts, Floating Parts, Mates, Motors, Gravity, Constraint Mapping Concept, Forces)

Introduction to Motion Simulation and Forces
- Driving Motion, Gravity
- Forces (Applied Forces, Force Definition and Direction)
- Results

Building a Motion Model and Post-Processing
- Mates and Local Mates
- Power
- Plotting Kinematic Results

Introduction to Contacts, Springs and Dampers
- Contact and Contact Friction
- Translational Spring and Dampers
- Analysis with Friction

Advanced Contact
- Fixing Motion with Motors, Path Mate Motor
- Motor Input and Force Input Types
- Functional Expressions
- Force, STEP Functions
- Contact: Solid Bodies
- Geometric Description of Contacts
- Instability Points
- Integrators

Curve to Curve Contact
- Solid Bodies vs. curve to curve contact
- Solid Bodies Contact Solution

CAM Synthesis
- Working Methodology
- Generating a CAM Profile
- Trace Paths and Exporting Trace Path Curves
- Cycle Based Motion

Flexible Joints
- System with Rigid, Flexible Joints
- Calculation of Wheel Input Motion
- Understanding Toe Angles

Redundancies
- What are redundancies, effect thereof, and how redundancies are removed in the solver.
- Total Actual and Estimated DOF
- Using Flexible Joints Option to Remove Redundancies
- Limitations of Flexible Mates
- Bushing Properties
- How to Check for Redundancies
- Typical Redundant Mechanism

Export to FEA
- Load Bearing Faces
- Mate Locations
- Export of Loads
- Direct Solution in SolidWorks Motion

Event Based Simulation
- Servo Motors
- Sensors
- Task

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