cadmicro **SOLIDWORKS TRAINING**

SOLIDWORKS MOTION

PREREQUISITES	LENGTH	DESCRIPTION
▪ Knowledge of SOLIDWORKS required. Basics of Motion Manager and basic mechanical engineering concepts is recommended.	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.

▶ INTRO TO MOTION SIMULATION & FORCES

- Objectives
- Basic Motion Analysis
- Case Study: Car Jack Analysis
- Driving Motion
- Forces
- Understanding Forces
- Results
- Exercise l: 3D Fourbar Linkage

▶ BUILD MOTION MODEL & POST-PROCESSING

- Creating Local Mates
- Case Study: Crank Slider Analysis
- Mates
- Local Mates
- Function Builder
- Importing Data Points
- Power
- Plotting Kinematic Results
- Exercise 2: Piston
- Exercise 3: Trace Path

▶ INTRO TO CONTACTS, SPRINGS & DAMPERS

- Contact and Friction
- Case Study: Catapult
- Translational Spring
- Exercise 4: The Bug
- Exercise 5: Door Closer

▶ ADVANCED CONTACT

- Contact Forces
- Case Study: Latching Assembly
- Motor Input and Force Input Types
- Force Functions
- STEP Function
- Contact: Solid Bodies
- Geometrical Description of Contacts
- Integrators
- Instability Points
- Modifying Result Plots
- Exercise 6: Hatchback
- Exercise 7: Conveyor Belt (No Friction)
- Exercise 8: Conveyor Belt (With Friction)

▶ CURVE TO CURVE CONTACT

- Case Study: Geneva Mechanism
- Curve to Curve Contact
- Solid Bodies vs. Curve to Curve Contact
- Solid Bodies Contact Solution
- Exercise 9: Conveyor Belt (Curve to curve contact with friction)

▶ CAM SYNTHESIS

- Case Study: Cam Synthesis
- Trace Path
- Exporting Trace Path Curves
- Exercise 10: Desmodromic Cam
- Exercise 11: Rocker Cam Profile

SOLIDWORKS MOTION

▶ MOTION OPTIMIZATION

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

▶ FLEXIBLE JOINTS

- Flexible Joints
- Case Study: System with Rigid Joints
- Calculation of Wheel Input Motion
- Understanding Toe Angles
- System with Flexible Joints

▶ REDUNDANCIES

- Redundancies
- Case Study: Door Hinges
- Using Flexible Joints Option to Remove Redundancies
- How to Check For Redundancies
- Typical Redundant Mechanisms
- Exercise 12: Dynamic Systems
- Exercise 13: Dynamic Systems 2
- Exercise 14: Kinematic Mechanism
- Exercise 15: Zero Redundancy Model-Part I
- Exercise 16: Zero Redundancy Model-Part 2 (Optional)
- Exercise 17: Removing Redundancies with Bushings
- Exercise 18: Catapult

▶ EXPORT TO FEA

- Exporting Results
- Case Study: Drive Shaft
- Load Bearing Faces
- Export of Loads
- Direct Solution in SOLIDWORKS Motion
- Exercise 19: Export to FEA

▶ EVENT BASED SIMULATION

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

▶ DESIGN PROJECT (OPTIONAL)

- Design Project
- Case Study: Surgical Shear - Part I
- Self Guided Problem - Part I
- Self Guided Problem - Part 2
- Problem Solution - Part I
- Creating the Force Function
- Force Expression
- Case Study: Surgical Shear - Part 2