

# Mechanism Simulation Using Creo Parametric 4.0

## Overview

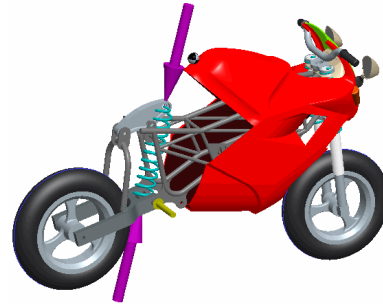
Course Code TRN-5122-T

Course Length 8 Hours

In this course, you will focus on learning advanced modeling and analysis skills. Topics will include developing the 3-D model, analyzing the mechanism model, and evaluating results. This course is designed for those with experience who want to add motion to their products and analyze dynamic reactions of moving components. These topics will enable you to measure dynamic reactions of components, measure the force required to keep a mechanism balanced, and determine the resting state of a mechanism. After completing this course, you will be prepared to work on mechanism designs using Creo Parametric Mechanism Dynamics Option (MDO).

At the end of each module, you will complete a set of review questions to reinforce critical topics from that module. At the end of the course, you will complete a course assessment in PTC University Proficiency intended to evaluate your understanding of the course as a whole.

This course has been developed using Creo Parametric 4.0



## Course Objectives

- Understand the mechanism dynamics option
- Apply force motors, springs, and dampers to assemblies
- Apply forces, torques, and gravity to assemblies
- Create dynamic analyses
- Create force balance analyses
- Create static analyses
- Measure forces, velocities, accelerations, and other reactions
- Evaluate results



## Prerequisites

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- Introduction to Creo Parametric
- Mechanism Design using Creo Parametric

## Audience

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- This course is intended for design engineers and mechanical designers who need to add and evaluate the motion of their assemblies. People in related roles will also benefit from taking this course.
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## Agenda

### Day 1

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Module	1	Introduction to the Mechanism Simulation Process
Module	2	Adding Dynamic Entities to a Mechanism
Module	3	Analyzing the Mechanism Model
Module	4	Evaluating Analysis Results
Module	5	Project

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## Course Content

### Module 1. Introduction to the Mechanism Simulation Process

- i. Introduction to Mechanism Simulation
- ii. Understanding the Mechanism Simulation Process
- iii. Creating the Model
- iv. Verifying the Mechanism
- v. Adding Dynamic Entities
- vi. Preparing for Analysis of a Mechanism
- vii. Analyzing the Mechanism
- viii. Evaluating Analysis Results

*Knowledge Check Questions*

### Module 2. Adding Dynamic Entities to a Mechanism

- i. Defining Mass Properties for a Dynamic Analysis
- ii. Creating Force Motors
- iii. Creating Springs
- iv. Creating Dampers
- v. Creating Dynamic Gear Connections
- vi. Creating Belt Connections
- vii. Using Dynamic Properties and Set Zero Position
- viii. Applying Friction and Restitution
- ix. Applying Force and Torque Loads
- x. Applying Gravity

*Knowledge Check Questions*

### Module 3. Analyzing the Mechanism Model

- i. Understanding Mechanism Dynamics Option Analysis Definitions
- ii. Configuring a Dynamic Analysis
- iii. Configuring a Static Analysis
- iv. Configuring a Force Balance Analysis
- v. Defining Initial Configurations
- vi. Creating Measures
- vii. Understanding Redundancies and Degrees of Freedom

*Knowledge Check Questions*

### Module 4. Evaluating Analysis Results

- i. Running Mechanism Analyses
- ii. Evaluating Playback Results for Collisions
- iii. Configuring Playback Results
- iv. Evaluating Results Using Display Arrows
- v. Graphing Measure Results

*Knowledge Check Questions*

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**Module 5. Project**

- i. The Stunt Bike
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