

# Mechanism Design using Creo Parametric 4.0

## Overview

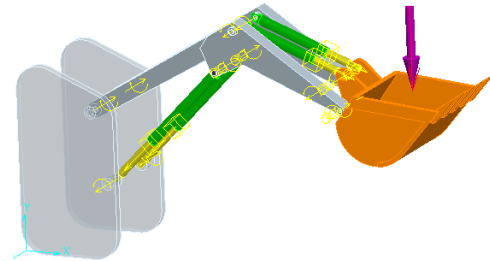
Course Code TRN-5121-T

Course Length 8 Hours

In this course, you will learn about creating mechanism connections, configuring the mechanism model, creating a kinematic analysis, and evaluating results. Mechanism Design using Creo Parametric is designed for experienced users who want to add motion to their models by creating mechanism connections and servo motors. In Creo Parametric you can add motion to your models using the standard mechanism functionality, often referred to as the Mechanism Design Extension (MDX). These topics will enable you to simulate the range of motion between components in your moving assemblies, create gear connections that simulate the gear ratios, create Cam connections that enable Creo Parametric parts to “push” other parts they come into contact with, and check for collisions between moving components. After completing this course, you will be prepared to work on mechanism designs using Creo Parametric Mechanism Design.

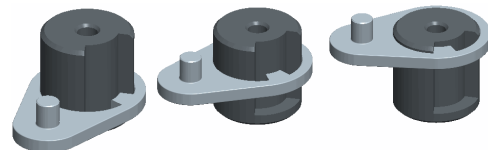
At the end of each module, you will complete a set of review questions to reinforce critical topics from that module. At the end of the course, you will complete a course assessment in PTC University Proficiency intended to evaluate your understanding of the course as a whole.

This course has been developed using Creo Parametric 4.0.



## Course Objectives

- Introduce the mechanism design process
- Create mechanism connections
- Configure motion and analysis
- Evaluate analysis results



## Prerequisites

---

- Introduction to Creo Parametric

## Audience

---

- 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.
-

## Agenda

### Day 1

---

Module	1	Introduction to the Mechanism Design Process
Module	2	Creating Mechanism Connections
Module	3	Configuring Motion and Analysis
Module	4	Evaluating Analysis Results

---

## Course Content

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

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

### Module 2. Creating Mechanism Connections

- i. Creating Mechanism Bodies
- ii. Understanding Constraints and Connection Sets
- iii. Understanding Predefined Connection Sets
- iv. Configuring Motion Axis Settings
- v. Using Rigid Connection Sets
- vi. Using Pin Connection Sets
- vii. Using Slider Connection Sets
- viii. Using Cylinder Connection Sets
- ix. Using Planar Connection Sets
- x. Using Ball Connection Sets
- xi. Using Weld Connection Sets
- xii. Using Bearing Connection Sets
- xiii. Using General Connection Sets
- xiv. Using Slot Connection Sets
- xv. Creating Cam-Follower Connections
- xvi. 3D Contact
- xvii. Creating Generic Gear Connections
- xviii. Creating Dynamic Gear Connections
- xix. Creating Belt Connections
- xx. Using the Drag and Snapshot Tools

### Module 3. Configuring Motion and Analysis

- i. Understanding Servo Motors
  - ii. Understanding Analysis Definitions
  - iii. Creating Geometry Servo Motors
  - iv. Creating Motion Axis Servo Motors
  - v. Creating Slot Motors
  - vi. Graphing the Magnitude of Servo Motors
-

- vii. Assigning Constant Motion
- viii. Assigning Ramp Motion
- ix. Assigning Cosine Motion
- x. Assigning SCCA Motion
- xi. Assigning Cycloidal Motion
- xii. Assigning Parabolic Motion
- xiii. Assigning Polynomial Motion
- xiv. Assigning Table Motion

#### **Module 4. Evaluating Analysis Results**

- i. Generating Measure Results for Analysis
  - ii. Creating Analysis Measure Definitions
  - iii. Evaluating Playback Results
  - iv. Understanding the Animate Dialog Box
  - v. Checking for Collisions
  - vi. Creating Motion Envelopes
-