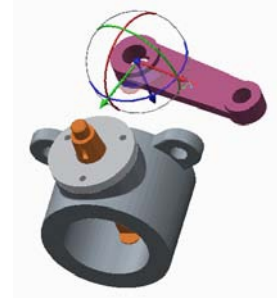


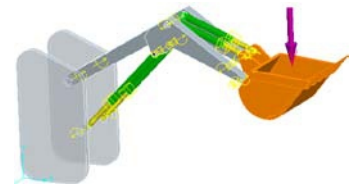
## Creo for Analyst

### Overview

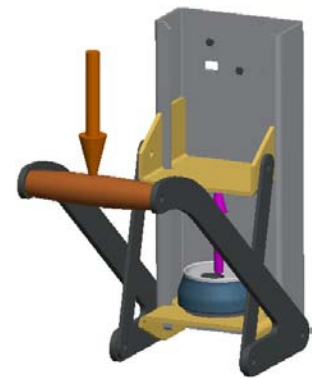
In this course, you will learn how to utilize the core functionality enhancements in Creo Parametric 2.0. First, you will become familiar with using and customizing the new ribbon interface in Creo Parametric. The new measure and sectioning interfaces will also be examined. Next, you will become familiar with the Sketcher workflow and reference enhancements. Part modeling enhancements to features such as Extrude, Corner Chamfer, Sweeps, Blends, and Datum Curves will then be examined. You will also learn about new and enhanced Assembly capabilities, such as selecting multiple components and enhancements for dragging components.



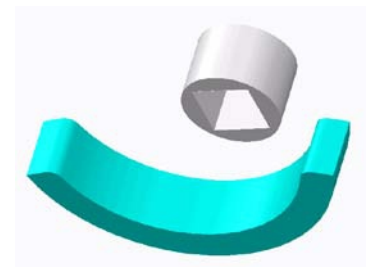
In this you will learn about creating mechanism connections, configuring the mechanism model, creating a kinematic analysis, and evaluating results. Mechanism Design using Creo Parametric is designed for experienced users who want to add motion to their models by creating mechanism connections and servo 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.



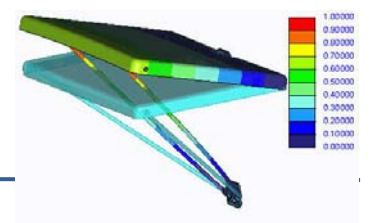
In this, you will focus on learning advanced modeling and analysis skills. Topics will include developing the 3-D model, analyzing the mechanism model, and evaluating results. This course is designed for experienced users who want to add motion to their products and analyze dynamic reactions of moving 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).



In this, you will focus on learning advanced analysis skills unrelated to structural or thermal analysis. You will learn how to analyze your models and create analysis features that can enforce your design intent. You will also learn how to create sensitivity and feasibility studies that aid you in determining how to reach your design goals. Furthermore, you will learn how to create optimization design studies that enable you to configure the dimensions and parameters that Creo Parametric can change in order to meet your design specifications. This course is designed for experienced users who want to add additional features that enable you to meet or exceed the design specifications of your products.



This course is designed for new users who want to test, validate, and optimize product designs with the Creo Simulate module. Simulate enables you to simulate structural and thermal loads on product designs. In this course, you will complete comprehensive, hands-on lab exercises that simulate realistic analysis and design optimization activities. You will also be introduced to advanced



topics such as dynamic analyses, combined mechanical and thermal analyses, and Optimization Studies. After completing the course, you will be able to run engineering analyses and optimizations on your product design models.

## Course Objectives

---

Introduction & Understanding to Creo Parametric Concepts  
Using Creo Parametric Interface  
Selecting & Editing of Geometry, Features, Models  
Creating Sketcher Geometry & Using Sketcher Tools  
Using Sketches & Datum Features  
Creating Extrudes & Revolves  
Creating Holes, Shells, Draft & Patterns  
Creating Rounds, Chamfers & Using Layers  
Assembling with Constraints  
Exploding, Replacing Components, Cross-Sections in Assemblies  
Introduction to Mechanism Design  
Introduction to Mechanism Simulation  
Introduction to Behavioral Modeling  
Introduction to Creo Simulate & Theoretical Foundations  
Model Preparation & Analysis Definition in Creo Simulate  
Loads, Constraints and Meshing in Creo Simulate  
More Analysis Types in Creo Simulate

## Prerequisites

---

None

## Audience

---

This course is intended for design engineers, mechanical designers, and industrial designers  
People in related roles can also benefit from taking this course

## Duration

---

84 Hrs (10.5 Days)  
*40 Hrs for ATC's Part (Basic) & Assembly Modeling (Basic) - Creo 2.0*  
*44 Hrs for ATC's Analysis in Creo - Creo 2.0*

## Agenda

---

### ATC's Part (Basic) & Assembly Modeling (Basic) - Creo 2.0

#### 1. Introduction & Understanding to Creo Parametric Concepts

- Creo Parametric Basic Modeling Process
- Understanding Solid Modeling Concepts
- Understanding Feature-Based Concepts
- Understanding Parametric Concepts
- Understanding Associative Concepts
- Understanding Model-Centric Concepts
- Recognizing File Extensions

#### 2. Using Creo Parametric Interface

- Understanding the Main Interface
- Understanding the Folder Browser
- Setting the Working Directory and Opening and Saving Files
- Understanding the Ribbon Interface
- Managing Files in Creo Parametric
- Understanding Datum Display Options
- Analyzing Basic 3-D Orientation
- Understanding the View Manager
- Setting Up New Part Models

#### 3. Selecting & Editing of Geometry, Features, Models

- Understanding Creo Parametric Basic Controls
- Using Drag Handles and Dimension Dragers
- Understanding the Model Tree
- Selecting Items using Direct Selection
- Selecting Items using Query Selection
- Using the Smart Selection Filter
- Utilizing Undo and Redo Operations
- Understanding Regeneration and Auto Regeneration
- Editing Features
- Editing Features using Edit Definition
- Deleting and Suppressing Items

#### 4. Creating Sketcher Geometry & Using Sketcher Tools

- Reviewing Sketcher Theory
- Understanding Design Intent
- Utilizing Constraints
- Sketching Lines
- Sketching Rectangles and Parallelograms

Sketching Circles

Sketching Arcs

Understanding Construction Geometry Theory

Using Geometry Tools within Sketcher

Dimensioning Entities within Sketcher

Modifying Dimensions within Sketcher

#### **5. Using Sketches & Datum Features**

Creating Sketches ('Sketch' Feature)

Specifying and Manipulating the Sketch Setup

Utilizing Sketch References

Using Entity from Edge within Sketcher

Creating Datum Features Theory

Creating Datum Axes

Creating Datum Planes

#### **6. Creating Extrudes & Revolves**

Creating Solid Extrude Features

Adding Taper to Extrude Features

Common Dashboard Options: Extrude Depth

Creating Solid Revolve Features

Common Dashboard Options: Revolve Angle

#### **7. Creating Holes, Shells, Draft & Patterns**

Common Dashboard Options: Hole Depth

Creating Coaxial Holes

Creating Linear Holes

Creating Radial and Diameter Holes

Creating Shell Features

Creating Draft Features

Creating Basic Split Drafts

Direction Patterning in the First Direction

Axis Patterning in the First Direction

Creating Reference Patterns of Features

#### **8. Creating Rounds, Chamfers & Using Layers**

Creating Rounds Theory

Creating Rounds by Selecting Edges

Creating Rounds by Selecting a Surface and Edge

Creating Rounds by Selecting Two Surfaces

Creating Full Rounds

Creating Chamfers by Selecting Edges

Analyzing Basic Chamfer Dimensioning Schemes

Understanding Layers

Utilizing Layers in Part Models

Creating and Managing Layers

## 9. Assembling with Constraints

Understanding Assembly Theory

Creating New Assembly Models

Understanding Constraint Theory

Assembling Components using the Default Constraint

Creating Coincident Constraints using Geometry

Creating Coincident Constraints using Datum Features

Creating Distance Constraints

Creating Parallel, Normal, and Angle Constraints

Assembling using Automatic

## 10. Exploding, Replacing Components, Cross-Sections in Assemblies

Creating and Managing Explode States

Animating Explode States

Understanding Component Replace

Replacing Components using Family Table

Understanding Assembly Cross-Sections

Creating Assembly Cross-Sections

Creating Offset Assembly Cross-Sections

Creating Display Styles

## ATC's Analysis in Creo - Creo 2.0

### 11. Introduction to Mechanism Design

Introduction to Mechanism Design

Understanding the Mechanism Design Process

Creating the Model

Verifying the Mechanism

Adding Servo Motors

Preparing for Analysis of a Mechanism

Analyzing the Mechanism

Evaluating Analysis Results

### 12. Introduction to Mechanism Simulation

Introduction to Mechanism Simulation

Understanding the Mechanism Simulation Process

Creating the Model

Verifying the Mechanism

- Adding Dynamic Entities
- Preparing for Analysis of a Mechanism
- Analyzing the Mechanism
- Evaluating Analysis Results
- Graphing Measure Results

### **13. Introduction to Behavioral Modeling**

- Behavioral Modeling Process
- Identifying BMX Analysis Types
- Identifying the Differences Between Creo Parametric Analyses
- Performing Sensitivity Analysis

### **14. Introduction to Creo Simulate & Theoretical Foundations**

- Simulate Analysis Functionality
- Simulate Model Functionality
- The Finite Element Method
- The Typical Simulation Process
- The h and p Versions of Finite Elements
- The p-Method
- Structural Mechanics – Stress Definitions and Hooke’s Law

### **15. Model Preparation & Analysis Definition in Creo Simulate**

- Managing Units
- Defining Linear Elastic Materials
- Convergence Methods
- Fundamentals of a Linear Static Analysis
- Defining a Linear Static Analysis
- Selecting a Convergence Method

### **16. Loads, Constraints and Meshing in Creo Simulate**

- Defining Forces, Moments, and Pressure
- Defining Constraints
- Using AutoGEM Settings

### **17. More Analysis Types in Creo Simulate**

- Using Modal Analysis
- Understanding Symmetry
- Using Shell Pairs for Midsurface Models
- Understanding Dynamic Analysis
- Understanding Linear Buckling Analysis