PTC® university

Advanced Assembly Design using Creo Parametric 2.0

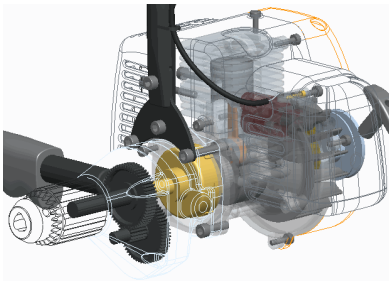
Overview

Course Code	TRN-3904-T
Course Length	3 Days

In this course, you will learn how to use Creo Parametric 2.0 to create and manage complex assemblies. You will learn how to use advanced assembly tools that enable you to add and maintain designs, increase your efficiency, and increase system performance when working with large assemblies. In addition, you will learn the basics of using and creating predefined assembly structures and skeletons, which are both valuable tools typically used in a top-down design process. The course also includes an assembly design project that enables you to practice your new skills by performing various design tasks in an assembly model.

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 Pro/FICIENCY intended to evaluate your understanding of the course as a whole.

Course Objectives



- Use advanced assembly constraints
- Create and using component interfaces
- Create and using flexible components
- Restructure and mirror assemblies
- Use assembly features and shrinkwrap
- Replace components in an assembly
- Understand the basics of simplified reps
- Create cross-sections, display styles, layer states, and combined views
- Substitute components using user-defined reps, envelopes, and simplified reps
- Understand advanced simplified rep functionality
- Create and use assembly structure and skeletons

Prerequisites

- Introduction to Creo Parametric 2.0
- Update to Creo Parametric 2.0 from Creo Elements/Pro 5.0

Audience

- This course is intended for design engineers, mechanical designers, and related roles

Agenda

Day 1

Module	1	Using Advanced Assembly Constraints
Module	2	Creating and Using Component Interfaces
Module	3	Creating and Using Flexible Components
Module	4	Restructuring and Mirroring Assemblies

Day 2

Module	5	Using Assembly Features and Shrinkwrap
Module	6	Replacing Components in an Assembly
Module	7	Understanding the Basics of Simplified Reps
Module	8	Creating Cross-Sections, Display Styles, Layer States, and Combined Views

Day 3

Module	9	Substituting Components using User Defined, Envelopes, and Simplified Reps
Module	10	Understanding Advanced Simplified Rep Functionality
Module	11	Creating and Using Assembly Structure and Skeletons
Module	12	Project

Course Content

Module 1. Using Advanced Assembly Constraints

i. Constraining Components using Fix
ii. Constraining Two Coordinate Systems using Coincident
iii. Constraining a Point on a Line using Coincident
iv. Constraining a Point on a Surface using Coincident
v. Constraining an Edge on a Surface using Coincident
vi. Constraining a Point on a Point using Coincident
vii. Creating a Tangent Constraint using Auto Constrain
viii. Configuring Constraint Sets with Parameters

Knowledge Check Questions

Module 2. Creating and Using Component Interfaces

i. Understanding Component Interfaces
ii. Using a Placing Component Interface
iii. Using a Receiving Component Interface
iv. Creating a Component Interface using the Save as Interface Dialog Box
v. Auto Placing Components
vi. Copying and Pasting Components
vii. Repeating Component Placement

Knowledge Check Questions

Module 3. Creating and Using Flexible Components

i. Adding Flexibility to a Component
ii. Placing Flexible Components in an Assembly
iii. Adding Flexibility to Already Placed Components
iv. Using Flexible Parameters

Knowledge Check Questions

Module 4. Restructuring and Mirroring Assemblies

i. Restructuring and Reordering Assembly Components
ii. Creating Mirrored Assemblies
iii. Creating Mirrored Components
iv. Creating Mirrored Sub-Assemblies

Knowledge Check Questions

Module 5. Using Assembly Features and Shrinkwrap

i. Understanding Assembly Features
ii. Understanding Assembly Feature Intersections
iii. Creating an Assembly Cut
iv. Creating Assembly Holes
v. Creating a Shrinkwrap Feature
vi. Creating a Shrinkwrap Model

vii. Summarizing Shrinkwrap Features and Models

Knowledge Check Questions

Module 6. Replacing Components in an Assembly

i. Understanding Component Replace
ii. Replacing Components using Family Table
iii. Replacing Components using Reference Model
iv. Replacing Components using By Copy
v. Replacing Unrelated Components
vi. Understanding Interchange Assemblies
vii. Replacing using a Functional Interchange Assembly

Knowledge Check Questions

Module 7. Understanding the Basics of Simplified Reps

i. Retrieving Assembly Subsets
ii. Understanding Standard Simplified Reps
iii. Understanding Custom Simplified Reps
iv. Lightweight Graphics Representations
v. Using Graphics Simplified Reps
vi. Using Geometry Simplified Reps
vii. Excluding Components using Simplified Reps
viii. Defining Simplified Reps Using the Component Chooser
ix. Creating a Default Envelope Simplified Rep
x. Creating Part Simplified Reps
xi. Opening Simplified Reps

Knowledge Check Questions

Module 8. Creating Cross-Sections, Display Styles, Layer States, and Combined Views

i. Understanding Assembly Cross-Sections
ii. Creating Assembly Cross-Sections
iii. Creating Offset Assembly Cross-Sections
iv. Creating Zone Assembly Cross-Sections
v. Creating Display Styles
vi. Creating Layer States in an Assembly
vii. Creating Combination Views

Knowledge Check Questions

Module 9. Substituting Components using User Defined, Envelopes, and Simplified Reps

i. Understanding Envelopes
ii. Creating and using a Surface Subset Shrinkwrap Envelope
iii. Creating and Using a Faceted Shrinkwrap Envelope
iv. Creating and Using an All Solid Surfaces Shrinkwrap Envelope
v. Creating and Using a Create Features Envelope
vi. Creating and Using an Envelope Copied from an Existing Part

vii. Substituting Components using User Defined
viii. Substituting by Interchange and Family Table

Knowledge Check Questions

Module 10. Understanding Advanced Simplified Rep Functionality

i. Searching for Components for Simplified Reps
ii. Creating Simplified Reps by Size
iii. Creating Simplified Reps using Zones
iv. Creating Simplified Reps by Distance
v. Creating Simplified Reps using Exterior Components
vi. Defining Simplified Reps using Rules
vii. Using On-Demand Simplified Reps
viii. Creating External Simplified Reps

Knowledge Check Questions

Module 11. Creating and Using Assembly Structure and Skeletons

i. Understanding Skeletons
ii. Creating an Assembly Structure
iii. Creating Skeletons for Space Claims
iv. Creating Skeletons for Placement References
v. Copying a Model to a Skeleton
vi. Creating Multiple Skeletons
vii. Sharing Skeleton Geometry
viii. Creating and Placing Models using Skeleton References
ix. Creating a Motion Skeleton
x. Sketching a Motion Skeleton
xi. Creating Bodies for a Motion Skeleton
xii. Assigning Connections for a Motion Skeleton
xiii. Creating Solid Models from a Motion Skeleton

Knowledge Check Questions

Module 12. Project

i. The Table Fan
ii. Skeleton Models
iii. The Shaft and Arm Parts
iv. Components to Assemblies
v. Editing the Design

Knowledge Check Questions