Advanced Assembly Design Using Creo Parametric 5.0

Overview

Course Code: TRN-5303-T
Course Length: 24 Hours

In this course, you will learn how to use Creo Parametric 5.0 to create and manage complex assemblies. You will discover 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 PTC University Proficiency intended to evaluate your understanding of the course as a whole.

This course has been developed using Creo Parametric 5.0.0.0

Course Objectives

- Use advanced component selection
- Use advanced assembly constraints
- Create and use component interfaces
- Utilize intelligent fasteners
- Create and use 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, and combined views
- Substitute components by reps, envelopes, and simplified reps
• Understand advanced simplified rep functionality
• Create and use assembly structure and skeletons
• Utilize design exploration

Prerequisites

• Introduction to Creo Parametric 5.0
• Update to Creo Parametric 5.0 from Creo Parametric 4.0

Audience

• This course is intended for design engineers and mechanical designers. People in related roles will also benefit from taking this course.
# Agenda

## Day 1

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Course Content

Module 1. Advanced Component Selection
   i. Locating Components in the Model Tree
   ii. Using the Assembly Model Tree Search Field
   iii. Selecting Multiple Components

Knowledge Check Questions

Module 2. Using Advanced Assembly Constraints
   i. Constraining Components using Fix
   ii. Constraining Two Coordinate Systems
   iii. Constraining a Point on a Line
   iv. Constraining a Point on a Surface
   v. Constraining an Edge on a Surface
   vi. Constraining a Point on a Point
   vii. Creating a Tangent Constraint
   viii. Configuring Constraint Sets with Parameters

Knowledge Check Questions

Module 3. 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 4. Utilizing Intelligent Fasteners
   i. Understanding the Intelligent Fastener Extension
   ii. Assembling Intelligent Fasteners
   iii. Manipulating Intelligent Fasteners
   iv. Assembling Intelligent Fasteners Using Advanced Options
   v. Manipulating Intelligent Fasteners Using Advanced Options
   vi. Inserting Heli-Coils

Knowledge Check Questions

Module 5. 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. Creating Flexible Components with Varied Material
   v. Using Flexible Parameters

Knowledge Check Questions
Knowledge Check Questions

Module 6. 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 7. 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 8. 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 9. Understanding the Basics of Simplified Reps
i. Retrieving Assembly Subsets
ii. Understanding Standard Simplified Reps
iii. Understanding Custom Simplified Reps
iv. Using Automatic Representations
v. Excluding Components Using Simplified Reps
vi. Defining Simplified Reps Using the Component Chooser
vii. Creating a Default Envelope Simplified Rep
viii. Creating Part Simplified Reps
ix. Opening Simplified Reps

Knowledge Check Questions

Module 10. 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 Appearance States
vii. Creating Layer States in an Assembly
viii. Creating Combination Views

Knowledge Check Questions

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 12. 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 13. 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
Creating Solid Models from a Motion Skeleton

Knowledge Check Questions

Module 14. Utilizing Design Exploration

i. Understanding Design Exploration
ii. Exploring Part and Assembly Designs
iii. Creating Design Exploration Branches
iv. Opening and Saving Design Exploration Sessions
v. Using Design Exploration Options
vi. Utilizing Update Control with Copy Geometry Features

Knowledge Check Questions

Module 15. Project

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