



Advanced Modeling using Creo Parametric 4.0

Overview

Course Code	TRN-5102-T
Course Length	24 Hours

The Advanced Modeling using Creo Parametric 4.0 training course teaches you how to use advanced part modeling techniques to improve your product designs. In this course, you will learn how to create and modify design models using advanced sketching techniques and feature creation tools. You will also learn how to reuse existing design geometry when creating new design models. After completing this course, you will be well prepared to work efficiently with complex product designs using Creo Parametric 4.0.

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

- Learn advanced selection techniques
- Create advanced datum features
- Use advanced sketching techniques
- Create advanced holes
- Create advanced drafts and ribs
- Create advanced shells
- Create advanced rounds and chamfers
- Use relations and parameters
- Create advanced blends
- Create sweeps with variable sections
- Create helical sweeps and 3D sweeps
- Create swept blends
- Learn advanced layer techniques
- Learn advanced reference management techniques
- Create family tables
- Reuse features
- Learn advanced copy techniques
- Create advanced patterns

Prerequisites

- Introduction to Creo Parametric 4.0

Audience

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

Day 1

Module	1	Advanced Selection
Module	2	Advanced Datum Features
Module	3	Advanced Sketching
Module	4	Advanced Hole Creation
Module	5	Advanced Drafts and Ribs
Module	6	Advanced Shells
Module	7	Advanced Rounds and Chamfers

Day 2

Module	8	Relations and Parameters
Module	9	Advanced Blends
Module	10	Sweeps with Variable Sections
Module	11	Helical Sweeps
Module	12	Swept Blends and Advanced Bends

Day 3

Module	13	Advanced Layers
Module	14	Advanced Reference Management
Module	15	Family Tables
Module	16	Reusing Features
Module	17	Advanced Copy
Module	18	Advanced Patterns

Course Content

Module 1. Advanced Selection

- i. Advanced Chain Selection
- ii. Advanced Surface Selection
- iii. Using the Search Tool

Module 2. Advanced Datum Features

- i. Creating Datum Graphs
- ii. Creating Datum Coordinate Systems
- iii. Creating Points On or Offset from Entities
- iv. Creating Points at Intersections
- v. Creating Points using an Offset Coordinate System
- vi. Sketching Geometry Datums
- vii. Creating Curves Through a Point or Vertex
- viii. Creating a Curve Through a Point Array
- ix. Creating a Curve from a Cross-Section
- x. Creating a Curve From Equation
- xi. Creating Composite Curves
- xii. Creating a Curve from Curve Intersections
- xiii. Creating a Curve at Surface Intersection
- xiv. Projecting and Wrapping Curves
- xv. Trimming Curves
- xvi. Creating Offset Curves
- xvii. Creating Cosmetic Sketches

Module 3. Advanced Sketching

- i. Using Sketched Curves
 - ii. Sketching Ellipses
 - iii. Sketching Elliptical Fillets
 - iv. Sketching Splines
 - v. Modifying Splines — Basic Operations
 - vi. Modifying Splines — Advanced Operations
 - vii. Importing and Exporting Spline Points
 - viii. Sketching Conics
 - ix. Sketching Text
 - x. Thickening Edges
 - xi. Analyzing Sketcher Convert Options
 - xii. Locking Sketcher Entities
 - xiii. Analyzing Sketcher Dimension Options
 - xiv. Sketcher Diagnostic Tools
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Module 4. Advanced Hole Creation

- i. Creating Standard Holes
- ii. Lightweight Hole Display
- iii. Creating Sketched Holes
- iv. Creating On Point Holes
- v. Using the Top Clearance Option
- vi. Creating Cosmetic Threads

Module 5. Advanced Drafts and Ribs

- i. Drafting Intent Surfaces
- ii. Analyzing Draft Hinges and Pull Direction
- iii. Creating Drafts with Multiple Angles
- iv. Using the Extend Intersect Surfaces Draft Option
- v. Creating Drafts Split at Sketch
- vi. Creating Drafts Split at Curve
- vii. Creating Drafts Split at Surface
- viii. Creating Drafts with Variable Pull Direction
- ix. Using the Exclude Areas with Draft Option
- x. Creating Trajectory Ribs

Module 6. Advanced Shells

- i. Analyzing Shell References and Thickness Options
- ii. Excluding Surfaces from Shells
- iii. Extending Shell Surfaces
- iv. Analyzing Shell Corner Options

Module 7. Advanced Rounds and Chamfers

- i. Analyzing Round Profile
 - ii. Analyzing Round Creation Methods
 - iii. Creating Rounds Through Curve
 - iv. Creating Variable Radius Rounds
 - v. Auto Round
 - vi. Creating Rounds by Reference
 - vii. Analyzing Round References and Pieces
 - viii. Using Intent Edges for Rounds
 - ix. Using Round Transitions
 - x. Creating Constant Width Rounds
 - xi. Analyzing Additional Chamfer Types
 - xii. Analyzing Advanced Chamfer Dimensioning Schemes
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- xiii. Analyzing Chamfer Creation Methods
- xiv. Creating Corner Chamfers
- xv. Creating Chamfers by Reference
- xvi. Analyzing Chamfer References and Pieces
- xvii. Using Intent Edges for Chamfers
- xviii. Using Chamfer Transitions

Module 8. Relations and Parameters

- i. Understanding Relation Theory
- ii. Understanding Relation Types
- iii. Understanding Basic Relation Operators and Functions
- iv. Understanding Advanced Relation Operators and Functions
- v. Exact Relation
- vi. Creating Parameters
- vii. Understanding Advanced Parameter Options
- viii. Creating Relations
- ix. Creating Relations for Patterns
- x. Creating Section Relations
- xi. Using the Evalgraph Function
- xii. Using Simultaneous Equations

Module 9. Advanced Blends

- i. Creating Blends by Selecting Non-Parallel Sections
- ii. Analyzing Blend Section Tools
- iii. Analyzing Blend Tangency
- iv. Creating Rotational Blends by Selecting Sections
- v. Creating Rotational Blends by Sketching Sections
- vi. Analyzing Rotational Blend Options
- vii. Analyzing Rotational Blend Tangency

Module 10. Sweeps with Variable Sections

- i. Understanding Sweeps with Variable Sections Theory
 - ii. Creating Sweeps using a Constant Section
 - iii. Creating Sweeps Normal to Trajectory
 - iv. Creating Sweeps Using Constant Normal Direction
 - v. Creating Sweeps with Variable Sections Normal to Projection
 - vi. Analyzing Horizontal and Vertical Control in Sweeps
 - vii. Creating Sweeps with Variable Sections Utilizing Multiple Trajectories
 - viii. Creating Sweeps with Variable Sections Using Tangent Trajectories
 - ix. Analyzing Sweeps with Variable Sections Trajectory Options and Rules
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- x. Using Trajpar with Solid Features
- xi. Using Trajpar and Datum Graphs with Solid Features

Module 11. Helical Sweeps

- i. Understanding Helical Sweeps Theory
- ii. Creating Helical Sweeps for Springs
- iii. Creating Helical Sweeps for Threads
- iv. Analyzing Helical Sweep Profile and Pitch Variations
- v. Utilizing Variable Sections in Helical Sweeps

Module 12. Swept Blends and Advanced Bends

- i. Understanding Swept Blend Theory
- ii. Creating Swept Blends by Selecting Sections
- iii. Creating Swept Blends by Sketching Sections
- iv. Analyzing Swept Blend Section Options
- v. Analyzing Swept Blend Section Plane Control
- vi. Analyzing Horizontal and Vertical Control in a Swept Blend
- vii. Analyzing Swept Blend Tangency
- viii. Analyzing Swept Blend Options
- ix. Analyzing Swept Blend Rules
- x. Creating Spinal Bends
- xi. Creating Toroidal Bends

Module 13. Advanced Layers

- i. Understanding Layers
- ii. Creating and Managing Layers
- iii. Creating Layer States
- iv. Creating Layer Rules
- v. Creating Layers in Assemblies

Module 14. Advanced Reference Management

- i. Editing Feature References
- ii. Replacing Feature References
- iii. Displaying Missing References
- iv. Replacing Sketcher References
- v. Replacing Sketcher Geometry

Module 15. Family Tables

- i. Understanding Family Table Theory
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- ii. Creating a Family Table
- iii. Patternizing Family Table Instances
- iv. Creating a Multi-Level Family Table
- v. Editing Family Table Members

Module 16. Reusing Features

- i. Creating UDFs
- ii. Placing UDFs
- iii. Creating UDFs Using On-Surface Coordinate Systems
- iv. Creating Inheritance Features
- v. Using External Merge to Add Material
- vi. Using External Merge to Remove Material

Module 17. Advanced Copy

- i. Configuring Independency
- ii. Analyzing Advanced Reference Configuration
- iii. Copying Features Fully Dependent with Options to Vary

Module 18. Advanced Patterns

- i. Understanding Pattern Regeneration Options
- ii. Creating Dimension Patterns in One Direction
- iii. Creating Dimension Patterns in Two Directions
- iv. Creating Rotational Dimension Patterns
- v. Creating Geometry Patterns
- vi. Creating Fill Patterns
- vii. Specifying Fill Pattern Settings
- viii. Creating Pattern Tables
- ix. Applying Pattern Tables
- x. Creating Curve Patterns
- xi. Creating Point Patterns
- xii. Unpatterning Group Patterns
- xiii. Creating Patterns of Patterns
- xiv. Moving/Mirroring Patterns

