Advanced Modeling using Creo Parametric 5.0

Overview

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<tr>
<th>Course Code</th>
<th>TRN-5302-T</th>
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<tr>
<td>Course Length</td>
<td>24 Hours</td>
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The Advanced Modeling Using Creo Parametric 5.0 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 5.0.

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 5.0.

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 volume helical sweeps (3-D 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 5.0

Audience

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

## Day 1

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## Day 2

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<td>Sweeps with Variable Sections</td>
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<td>Helical Sweeps and Volume Helical Sweep</td>
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<td>Swept Blends and Advanced Bends</td>
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## Day 3

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Course Content

Module 1. Advanced Selection
  i. Advanced Chain Selection
  ii. Advanced Surface Selection
  iii. Using the Search Tool

Knowledge Check Questions

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

Knowledge Check Questions

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

Knowledge Check Questions
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

Knowledge Check Questions

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. Handling Rounds and Chamfers in a Draft
xi. Creating Trajectory Ribs

Knowledge Check Questions

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

Knowledge Check Questions

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
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

Knowledge Check Questions

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

Knowledge Check Questions

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

Knowledge Check Questions

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
x. Using Trajpar with Solid Features
xi. Using Trajpar and Datum Graphs with Solid Features

Knowledge Check Questions

Module 11. Helical Sweeps and Volume Helical Sweep
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
vi. Using the Volume Helical Sweep Tool

Knowledge Check Questions

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

Knowledge Check Questions

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

Knowledge Check Questions

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

Knowledge Check Questions
Module 15. Family Tables
  i. Understanding Family Table Theory
  ii. Creating a Family Table
  iii. Patternizing Family Table Instances
  iv. Creating a Multi-Level Family Table
  v. Editing Family Table Members

Knowledge Check Questions

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

Knowledge Check Questions

Module 17. Advanced Copy
  i. Configuring Independency
  ii. Analyzing Advanced Reference Configuration
  iii. Copying Features Fully Dependent with Options to Vary

Knowledge Check Questions

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

Knowledge Check Questions