

Interactive Surface Design using Creo Parametric 3.0

Overview

Course Code TRN-4519-T

Course Length 2 Days

In this course, you will learn how to use the Style environment to create and manipulate surfaces details and advanced surface models. You will also learn how to integrate style features with other parametric features in design models. After completing this course, you will be well prepared to design complex-shaped surface models in Creo Parametric.

In Creo Parametric, you can create surface models using the Style modeling environment. The Style modeling environment is a spline-based freeform modeler that enables you to combine the parametric feature-based modeling approach with the unconstrained surface modeling approach. This gives you the flexibility to design complex-shaped products in a single modeling environment. The Style tool is available through the Interactive Surface Design Extension (ISDX).

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

- Describe the style surface modeling process
- Describe the style surface modeling concepts
- Create initial style curves
- Develop style surface models
- Use advanced tools and techniques for defining style shapes
- Create smooth style surface models
- Integrate style and parametric features
- Use techniques for creating common detailed shapes
- Create complex, high quality style surface models



Prerequisites

- Introduction to Creo Parametric 3.0

Audience

- This course is intended for design engineers and mechanical designers who need to create styled surface geometry. People in related roles will also benefit from taking this course.
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Agenda

Day 1

Module	1	Introduction to the Style Surface Modeling Process
Module	2	Understanding Style Surface Modeling Concepts
Module	3	Creating Initial Style Curves
Module	4	Developing Style Surface Models

Day 2

Module	5	Advanced Tools and Techniques for Defining Style Shapes
Module	6	Creating Smooth Style Surface Models
Module	7	Integrating Style and Parametric Features
Module	8	Techniques for Creating Common Detailed Shapes
Module	9	Creating Complex, High Quality Style Surface Models

Course Content

Module 1. Introduction to the Style Surface Modeling Process

- i. Introduction to Freeform Surface Modeling
- ii. Understanding Surface Modeling Paradigms
- iii. Combining Style and Parametric Modeling
- iv. Typical Style Modeling Process

Module 2. Understanding Style Surface Modeling Concepts

- i. Understanding the Style Tool
- ii. Understanding Style Features
- iii. Understanding Datum Features within Style
- iv. Understanding the Style Modeling Environment
- v. Using Style Tool Shortcut Menus
- vi. Using Style Tool Key Combinations
- vii. Understanding Active Planes
- viii. Understanding the Style Tool 4-View Layout
- ix. Understanding Style Preferences

Module 3. Creating Initial Style Curves

- i. Understanding Style Curves
- ii. Creating Basic Style Curves
- iii. Creating Style Curves as Circles or Arcs
- iv. Manipulating Style Point Locations
- v. Connecting Curves Using Soft Points
- vi. Manipulating Soft Points
- vii. Defining Endpoint Tangency
- viii. Defining Soft Endpoint Tangency
- ix. Editing Curves
- x. Creating Radial Path Planar Curves
- xi. Using the 4-View Layout to Modify Curves
- xii. Analyzing Curves

Module 4. Developing Style Surface Models

- i. Understanding Style Surfaces
 - ii. Creating Boundary Surfaces
 - iii. Creating Loft Surfaces
 - iv. Using Multiple Curves as a Single Boundary
 - v. Creating a Blend Surface Using the Radial Option
 - vi. Creating a Blend Surface Using the Uniform Option
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- vii. Using Surfaces to Define Curves
- viii. Creating a Curve on Surface Type Curve
- ix. Intersecting to Create a Curve on Surface
- x. Creating a Curve Using Curve from Surface
- xi. Manipulating Curve on Surface Type Curves
- xii. Trimming Surfaces in the Style Tool

Module 5. Advanced Tools and Techniques for Defining Style Shapes

- i. Manipulating Shapes Using Internal Curves
- ii. Copying and Moving Curves
- iii. Copying Curves Proportionally
- iv. Offsetting Curves
- v. Modifying Curve Shapes Proportionally
- vi. Unlinking Style Curves
- vii. Making Curves Planar Between Endpoints
- viii. Editing Style Surfaces
- ix. Resolving Failed Style Geometry
- x. Using References from Design Models
- xi. Using Imported 3-D Data

Module 6. Creating Smooth Style Surface Models

- i. Understanding Curvature
- ii. Using the Knots Analysis Tool
- iii. Using the Curvature Analysis Tool
- iv. Using Visual Mirror with a Curvature Analysis
- v. Manipulating Surface Boundary Connections
- vi. Understanding Surface Connection Order
- vii. Using the Connection Analysis Tool
- viii. Analyzing Continuity of Style Designs
- ix. Using the Shaded Curvature Analysis Tool
- x. Using the Reflection Analysis Tool
- xi. Using the Dihedral Angle Analysis Tool

Module 7. Integrating Style and Parametric Features

- i. Understanding Parallel Modeling
 - ii. Using Style Surfaces to Define Solid Geometry
 - iii. Exporting Curve Parameters for Modification
 - iv. Referencing a Parametric Framework
 - v. Manipulating Style Geometry Using Editing Tools
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Module 8. Techniques for Creating Common Detailed Shapes

- i. Creating Common Detailed Shapes
- ii. Creating Scoops or Bulges Using Intersecting Surfaces
- iii. Creating Scoops or Bulges with Definite Boundaries
- iv. Creating Scoops or Bulges with Blurred Boundaries
- v. Creating Split Surface Geometry

Module 9. Creating Complex, High Quality Style Surface Models

- i. Understanding Singularity in Triangular Surfaces
 - ii. Reparameterizing a Surface
 - iii. Understanding Four-Boundary Surfaces
 - iv. Using the Overbuild Technique
 - v. Using the Create Boundaries Technique
 - vi. Using the Void Boundary Technique
 - vii. Creating a Four-Boundary Rounded Shape
 - viii. Creating a Triangular Shape Using Four Boundaries
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