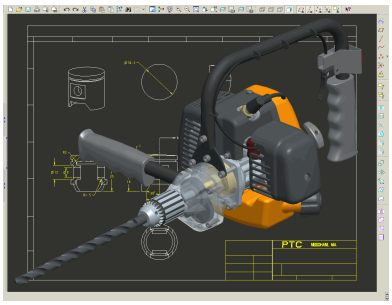
PTC University

Introduction to Pro/ENGINEER Wildfire 4.0

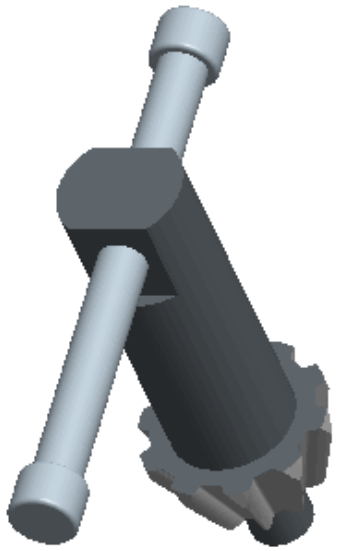
Overview

Course Code	TRN-2169–T
Course Length	5 Days



This course is designed for new users who want to become proficient with Pro/ENGINEER Wildfire 4.0 as quickly as possible. You will focus on learning core-modeling skills in this comprehensive, hands-on course. Topics include sketching, part modeling, assemblies, drawings, and basic model management techniques. The course also includes a comprehensive design project that enables you to practice your new skills by creating realistic parts, assemblies, and drawings. At the end of each module, you will find a set of review questions to reinforce critical topics from that module. Your instructor will discuss these with the class. At the end of the course, you will find a course assessment in Pro/FICIENCY intended to evaluate your understanding of the course as a whole. After completing the course you will be well prepared to work effectively on product design projects using Pro/ENGINEER Wildfire.

Course Objectives



- Learning the basic Pro/ENGINEER Design Process
- Understanding Pro/ENGINEER concepts
- Learning how to use the Pro/ENGINEER interface
- Selecting and editing items
- Sketching geometry and using tools
- Creating sketches for features
- Creating datum planes and datum axes
- Creating extrudes, revolves, and ribs
- Utilizing internal sketches and embedded datums
- Creating holes, drafts, and shells
- Creating sweeps and blends
- Creating rounds and chamfers
- Grouping, copying, and mirroring items
- Creating patterns
- Measuring and inspecting models
- Assembling with constraints
- Assembling with connections
- Exploding assemblies
- Creating drawing views
- Creating drawing details
- Using layers
- Investigating parent/child relationships
- Capturing and managing design intent
- Resolving failures and seeking help
- Comprehensive Design Project

Prerequisites

- None

Audience

- This course is intended for product designers, drafters, industrial/conceptual designers, and routed systems designers. People in related roles will also benefit from taking this course.

Agenda

Day 1

Module	1	Introduction to the Pro/ENGINEER Wildfire Basic Modeling Process
Module	2	Understanding Pro/ENGINEER Concepts
Module	3	Using the Pro/ENGINEER Interface
Module	4	Selecting and Editing
Module	5	Creating Sketcher Geometry

Day 2

Module	6	Using Sketcher Tools
Module	7	Creating Sketches for Features
Module	8	Creating Datum Features: Planes and Axes
Module	9	Creating Extrudes, Revolves, and Ribs
Module	10	Utilizing Internal Sketches and Embedded Datums
Module	11	Creating Sweeps and Blends

Day 3

Module	12	Creating Holes and Shells
Module	13	Creating Rounds and Chamfers
Module	14	Group, Copy, and Mirror Tools
Module	15	Creating Patterns
Module	16	Measuring and Inspecting Models

Day 4

Module	17	Assembling with Constraints
Module	18	Assembling with Connections
Module	19	Exploding Assemblies
Module	20	Creating Drawing Views
Module	21	Creating Drawing Details
Module	22	Using Layers

Day 5

Module	23	Investigating Parent/Child Relationships
Module	24	Capturing and Managing Design Intent
Module	25	Resolving Failures and Seeking Help
Module	26	Project

Course Content

Module 1. Introduction to the Pro/ENGINEER Wildfire Basic Modeling Process

i. Pro/ENGINEER Wildfire Basic Modeling Process

Module 2. Understanding Pro/ENGINEER Concepts

i. Understanding Solid Modeling Concepts
ii. Understanding Feature-Based Concepts
iii. Understanding Parametric Concepts
iv. Understanding Associative Concepts
v. Understanding Model-Centric Concepts
vi. Recognizing File Extensions

Module 3. Using the Pro/ENGINEER Interface

i. Understanding the Main Interface
ii. Understanding the Folder Browser
iii. Understanding the Web Browser
iv. Understanding the Window Menu
v. Setting the Working Directory and Opening and Saving Files
vi. Managing Files in Pro/ENGINEER
vii. Understanding Basic Display Options
viii. Analyzing Basic 3-D Orientation
ix. Understanding the View Manager
x. Creating and Managing View Orientations
xi. Creating Style States using the View Manager
xii. Understanding Basic Color and Appearance Options
xiii. Setting Up New Part Models

Module 4. Selecting and Editing

i. Understanding Pro/ENGINEER Basic Controls
ii. Using Drag Handles
iii. Using Keyboard Shortcuts
iv. Understanding the Model Tree
v. Understanding Model Tree Filters
vi. Understanding Basic Model Tree Columns
vii. Selecting Items using Direct Selection
viii. Selecting Items using Query Selection
ix. Using the Search Tool
x. Using the Smart Selection Filter
xi. Understanding Selection Filters
xii. Renaming Objects
xiii. Editing Features and Regenerating
xiv. Activating and Editing Models

xv. Deleting and Suppressing Items
xvi. Editing Feature and Component Visibility

Module 5. Creating Sketcher Geometry

i. Reviewing Sketcher Theory
ii. Understanding Design Intent
iii. Modifying the Sketcher Display
iv. Utilizing Constraints
v. Sketching Lines
vi. Sketching Centerlines
vii. Sketching Rectangles
viii. Sketching Circles
ix. Sketching Arcs
x. Sketching Circular Fillets

Module 6. Using Sketcher Tools

i. Understanding Construction Geometry Theory
ii. Sketching Points
iii. Using Geometry Tools within Sketcher
iv. Manipulating Sketches within Sketcher
v. Dimensioning Entities within Sketcher
vi. Modifying Dimensions within Sketcher
vii. Sketcher Conflicts
viii. Creating New Sketch Files
ix. Placing Sections into Sketcher

Module 7. Creating Sketches for Features

i. Creating Sketches ('Sketch' Feature)
ii. Specifying the Sketch Setup
iii. Utilizing Sketch References
iv. Using Entity from Edge within Sketcher

Module 8. Creating Datum Features: Planes and Axes

i. Creating Datum Features Theory
ii. Creating Datum Axes
iii. Creating Datum Planes

Module 9. Creating Extrudes, Revolves, and Ribs

i. Creating Solid Extrude Features
ii. Common Dashboard Options: Extrude Depth
iii. Common Dashboard Options: Feature Direction
iv. Common Dashboard Options: Thicken Sketch
v. Creating Solid Revolve Features
vi. Common Dashboard Options: Revolve Angle

vii. Creating Rib Features

Module 10. Utilizing Internal Sketches and Embedded Datums

i. Creating Internal Sketches
ii. Creating Embedded Datum Features

Module 11. Creating Sweeps and Blends

i. Creating Sweeps with Open Trajectories
ii. Creating Sweeps with Closed Trajectories
iii. Analyzing Sweep Feature Attributes
iv. Creating a Parallel Blend Protrusion or Cut
v. Experimenting with Parallel Blend Attributes
vi. Analyzing Parallel Blend Section Tools

Module 12. Creating Holes and Shells

i. Common Dashboard Options: Hole Depth
ii. Creating Coaxial Holes
iii. Creating Linear Holes
iv. Creating Radial and Diameter Holes
v. Exploring Hole Profile Options
vi. Creating Shell Features

Module 13. Creating Rounds and Chamfers

i. Creating Rounds Theory
ii. Creating Rounds by Selecting Edges
iii. Creating Rounds by Selecting a Surface and Edge
iv. Creating Rounds by Selecting Two Surfaces
v. Creating Full Rounds
vi. Creating Round Sets
vii. Creating Chamfers by Selecting Edges
viii. Analyzing Basic Chamfer Dimensioning Schemes
ix. Creating Chamfer Sets

Module 14. Group, Copy, and Mirror Tools

i. Creating Local Groups
ii. Copying and Pasting Features
iii. Moving and Rotating Copied Features
iv. Mirroring Selected Features
v. Mirroring All Features
vi. Creating Mirrored Parts

Module 15. Creating Patterns

i. Direction Patterning in the First Direction
ii. Direction Patterning in the Second Direction
iii. Axis Patterning in the First Direction

iv. Axis Patterning in the Second Direction
v. Creating Reference Patterns of Features
vi. Creating Reference Patterns of Components
vii. Deleting Patterns or Pattern Members

Module 16. Measuring and Inspecting Models

i. Analyzing Model Units and Mass Properties
ii. Measuring Models
iii. Creating Planar Part Cross-Sections
iv. Measuring Global Interference

Module 17. Assembling with Constraints

i. Understanding Assembly Theory
ii. Creating New Assembly Models
iii. Understanding Constraint Theory
iv. Understanding Assembly Constraint Status
v. Assembling Components using the Default Constraint
vi. Analyzing Basic Component Orientation
vii. Constraining Components using Insert
viii. Constraining Components using Mate Coincident
ix. Constraining Components using Align Coincident
x. Constraining Components using Align and Mate Offset
xi. Constraining Components using Align and Mate Oriented
xii. Constraining Components using Align and Mate Angle
xiii. Constraining Components using the Automatic Option

Module 18. Assembling with Connections

i. Understanding Connection Theory
ii. Assembling Components using the Slider Connection
iii. Assembling Components using the Pin Connection
iv. Assembling Components using the Cylinder Connection
v. Dragging Connected Components
vi. Analyzing Collision Detection Settings

Module 19. Exploding Assemblies

i. Creating and Managing Explode States
ii. Creating Offset Lines Between Exploded Components

Module 20. Creating Drawing Views

i. Analyzing Drawing Concepts and Theory
ii. Analyzing Basic 2-D Orientation
iii. Creating New Drawings and Applying Formats
iv. Creating and Orienting General Views
v. Adding Drawing Models and Sheets

vi. Creating Projection Views
vii. Creating Cross-Section Views
viii. Creating Detailed Views
ix. Creating Auxiliary Views
x. Creating New Drawings using Drawing Templates
xi. Modifying Drawing Views
xii. Creating Assembly and Exploded Views

Module 21. Creating Drawing Details

i. Analyzing Detail Concepts and Types
ii. Showing and Erasing Detail Items
iii. Cleaning Up Dimensions
iv. Manipulating Dimensions
v. Creating Driven Dimensions
vi. Creating Notes
vii. Showing a Bill of Materials
viii. Analyzing Drawing Associativity

Module 22. Using Layers

i. Understanding Layers
ii. Creating and Managing Layers
iii. Utilizing Layers in Part Models
iv. Utilizing Layers in Assembly Models

Module 23. Investigating Parent/Child Relationships

i. Understanding Parent/Child Relationships
ii. Viewing Part Parent/Child Information
iii. Viewing Assembly Parent/Child Information
iv. Viewing Model, Feature, and Component Information

Module 24. Capturing and Managing Design Intent

i. Handling Children of Deleted and Suppressed Items
ii. Reordering Features
iii. Inserting Features
iv. Redefining Features and Sketches
v. Capturing Design Intent in Sketches
vi. Capturing Design Intent in Features
vii. Capturing Design Intent in Parts
viii. Capturing Design Intent in Assemblies

Module 25. Resolving Failures and Seeking Help

i. Understanding Resolve Mode Theory and Tools
ii. Analyzing Geometry Failures
iii. Analyzing Open Section Failures

iv. Analyzing Missing Part References Failures
v. Analyzing Missing Component Failures
vi. Analyzing Missing Component Reference Failures
vii. Analyzing Invalid Assembly Constraint Failures
viii. Using Pro/ENGINEER Help

Module 26. Project

i. The Air Circulator
ii. Piston Assembly
iii. Crankshaft, Engine Block, and Drawing
iv. Blower Assembly
v. Engine Blower Assembly
vi. Completing the Design