

COACH Pro/ENGINEER Wildfire 4.0 Curriculum Guide

Web Based Curriculum Guide

- Modeling
 - Assemblies
 - Advanced Modeling
 - Detailing
 - COACH Update from Pro/ENGINEER Wildfire 3.0 to Pro/ENGINEER Wildfire 4.0
 - COACH Update from Pro/ENGINEER Wildfire 2.0 to Pro/ENGINEER Wildfire 4.0
 - Surfaces
 - Introduction to Mechanisms (MDX)
-

Modeling

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2649
Course Length	40 – 60 Hours

Overview

This self-study tutorial is for Designers and Detailers who are new users of Pro/ENGINEER Wildfire 4.0. The Modeling course provides introductory learning in the basics of Pro/ENGINEER and progresses to advanced topics such as Sweeps, Blends and Parameter Driven Parts. The Modeling course is a prerequisite for most of the other COACH courses. In this course, you will create basic and complex/ENGINEER parts as well as modify and maintain them. You will also be able to trouble-shoot problems with parts and recover from regeneration failures.

Prerequisites

None

Topics

General Interaction

- Manipulating the View
- Reorient the View
- Accessing Part Files
- Multiple Part Windows
- Erasing Parts and Exiting

Parametric Models

- Understanding Relationships
- Planning Your Design
- Model Templates
- Managing Data

Basic Modeling

- Using a Template
 - Setting up a Sketch
 - Sketching a Protrusion
 - Cut Feature
 - Revolved Feature
 - Multiple Sketched Features
 - External Sketches
-

Intent Manager

- Arcs and Circles
- Fillets
- Creating Dimensions
- Constraints
- Use and Offset Edges Tools

Manipulating Sketches

- Trimming Sketch Curves
- Mirroring Curves
- Construction Curves
- Copy and Scale
- Sketches from a File
- The Sketcher Palette

Rounds

- Edge Rounds
- Surface to Surface
- Through Curve
- Full Round
- Variable Radius
- Round All

Basic Modifications

- Edit
- Drag Section Sketch
- Edit Definition
- Edit Sketch
- Undo/Redo

Datums

- Single Constraint
- Two Constraints
- Datum Axis

Holes

- Linear Placement
- Radial Placement
- Coaxial Placement
- Sketched Holes

More Features

- Shell Feature
 - Chamfer Feature
 - Draft Feature
 - Split Draft
 - Rib Feature
-

- Thicken Sketch Option

Sweeps and Blends

- Linear Sweeps
- Parallel Blends
- Rotational Blends
- General Blends

Modifying References

- Change Sketch Plane
- Reroute References
- Reorder Features
- Insert Mode

Duplicating Features

- Paste Special
- Varied Items
- Paste
- Mirroring a Feature
- Linear Dimension Pattern
- Radial Dimension Pattern
- Direction and Axis Pattern

Resolve Features

- Undoing Changes
- Investigate a Failure
- Redefine References
- Reroute Feature
- Troubleshooter Dialog

Parameter Driven Parts

- Parameter Names
- Adding Relations
- User-Defined Parameters

Getting Information

- Using Info
- Using Set Up
- Using Analysis
- Buried Features
- Compare Part

Projects

- The Molded Part
 - The Tooling Plate
 - The Locking Strap
-

Assemblies

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2650
Course Length	24 - 32 Hours

Overview

This self-study tutorial is for Designers who use Pro/ENGINEER to create assemblies. The Assemblies course teaches the basics of assembly design and constraints. In this course, you will learn how to assemble existing parts using a Bottom-Up Design methodology as well as build a Top Down Design structure using Skeletons and Map Parts.

After completing this course, you will be able to share engineering data in a concurrent design environment, You will be able to create exploded views, make complex changes, trouble-shoot and resolve failures in assemblies.

Prerequisites

COACH for Modeling

Topics

Bottom Up Design

- Using Coordinate Systems
- Other Constraints
- Automatic Constraint
- Using Templates
- Using Datum Planes

Additional Tools

- The Model Tree
- Getting Information
- Component Dragging
- Repeating Components
- Component Interfaces

Editing Assemblies

- Patterning Components
- Reference Patterns
- Assembly References
- Changing Constraints
- Using Package
- Assembly Features

Top Down Design

- Layers
- Creating a Skeleton
- The First Component
- Using a Skeleton
- Creating Map Parts
- Using Map Parts

Visualizations

- Style States
- Exploded State
- Reset Position
- Copy Position

•

Part Merge

- Merging Parts
 - Mirrored Components
-

Advanced Modeling

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2651
Course Length	40 Hours

Overview

This self-study tutorial is for Designers who use Pro/ENGINEER to create and manipulate complex parts and assemblies. The Advanced Modeling course teaches complex Pro/ENGINEER tasks such as using relations and parameters to define Family-of-Parts applications. In this course you will learn how to utilize User Defined Features, Pattern Tables and Pro/PROGRAM to enhance the flexibility of the overall design environment and greatly reduces repetitive engineering techniques. You will also learn how to apply engineering standardization and avoid the many pitfalls associated with re-using design data across your organization.

Prerequisites

COACH for Modeling, COACH for Assemblies

Topics

Object Display

- Hide Objects
- Hide Layer
- Activate Layer
- Add Items to a Layer
- Isolate Layer
- Suppress by Layer

Datum Points

- Single Reference
- Multiple References
- Sketched Points
- Offset Points

Datum Curves

- Sketched Datum Curves
 - Datum Curves Thru Points
 - Sweep Curves
 - Projected on a Plane
 - Copy Curve
 - Curves from Equations
-

Relations

- Documenting Design Intent
- Section Relations
- Analysis Parameters

Sketcher

- Text
- Conics and RHO Value
- Splines
- Replace Curve

Variable Sect Sweep

- Basic Sweep
- Section Plane Control
- Trajectory Parameter
- Using Datum Graphs

Standard Holes

- Hole Shape
- Hole Callout
- Thread Surface

User Defined features

- Using a UDF
- Storing a UDF
- Variable Dimensions

Advanced Patterns

- Creating a Pattern Table
- Pattern to Pattern Table
- Area Fill
- Multiple Dimensions

Family tables

- Creating a Family Table
- Adding Features

Pro/PROGRAM

- Creating a Program
- Prompt for User Input

Advanced Rounds

- Round Sets
 - Corner Transitions
 - Other Transitions
-

- Intent Edges

Helical Sweeps

- Linear Profile
- Tapered Profile
- Variable Pitch

Customize the Window

- Ceating a Mapkey
- Adding Commands
- Controlling Toolbars
- Adding Mapkeys

Projects

- The Angular Fitting
 - The Keyboard Key
 - The Wrench Socket
 - The Nylon Roller
-

Detailing

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2652
Course Length	30 - 40 Hours

Overview

This self-study tutorial is for Designers and Detailers who use Pro/ENGINEER to create production drawings. The Detailing course teaches users the basic concepts of creating drawings from Pro/ENGINEER solid models. In this course you will learn how to create views, display and manipulate dimensions on a drawing. You will also learn how to show and format detail items such as parameters and bi-directionally associative dimensions.

After completing this course, you will be able to create fully associative, parametric drawings in Pro/ENGINEER.

Prerequisites

COACH for Modeling

Topics

Creating a Drawing

- Creating a New Drawing
- Placing the First View
- Projecting Views
- Auxiliary Views
- Detail Views
- Isometric Views
- Partial Views
- Broken Views

Sections

- Planar Sections
- Offset Sections
- Revolved Sections
- Breakout Sections

Detailing

- Show Dimensions
 - Switch View
 - Moving Dimensions
 - Displaying Centerlines
 - Erasing Dimensions
 - Extension Lines
-

- Other Annotation
- Dimension Properties

Tolerances

- Displaying Tolerances
- Tolerance Format
- Tolerance Value

GD&T

- Setting Datums
- Creating Frames

Text

- Parameters & Dimensions
- Parameters & Notes

Formats

- Drawing a Border
- Adding Text
- Editing Text

Assembly Drawings

- Assembly Formats
 - Section View Display
 - Adding BOM Data
-

COACH Update from Pro/ENGINEER Wildfire 3.0 to Pro/ENGINEER Wildfire 4.0

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2653
Course Length	8 Hours

Overview

In this course you will learn how to utilize many of the enhancements to core functionality in Pro/ENGINEER Wildfire 4.0. You will become familiar with enhancements to Part mode, including Draft, Swept Blends, UDFs and general interface enhancements. You will become familiar with the enhancements to Sketcher, such as referencing intent objects and replacing sketcher references. You will learn about new and enhanced Assembly capabilities such as the Global Reference Manager. You will review Drawing and Sheetmetal enhancements as well.

Prerequisites

Pro/ENGINEER Wildfire 3.0 users with a minimum of 500 hours of experience.

Topics

Introduction

Part Enhancements

- Navigator and Browser Enhancements
- File Open Dialog Enhancements
- Parameters Dialog Enhancements
- One-By-One Selection
- Exact Relation
- Asynchronous Curve Creation
- Hole Profile Options
- Tapered Holes and Pipe Threads
- Cosmetic Thread Enhancements
- Shell Enhancements
- Group Enhancements
- Part Parent/Child Information Enhancements

Advanced Part Enhancements

- Draft Enhancements
 - Extend Enhancements
 - Swept Blend Enhancements
 - Intent Datum Features Enhancements
 - UDF Enhancements
-

- Intent-Based UDFs
- Merge Enhancements
- Remove Surface Feature
- Auto Round

Sketcher Enhancements

- Default Diameter Dimensions
- Auto-Locking Dimensions
- Sketcher Line Style and Color
- Undo/Redo Reorient View
- Sketcher Intent Object Referencing
- Replacing Sketcher References
- Sketcher Diagnostic Tools

Assembly Enhancements

- Zone Enhancements
- Axis Alignment Enhancements
- Clipped State Enhancements
- Frozen Component Enhancements
- Assembly Family Table Enhancements
- Simplified Representation Enhancements
- Global Reference Viewer
- Replace Component Enhancements
- Component Transparency Enhancements
- Active Component Enhancements

Drawing Enhancements

- Cross Section Enhancements
- Full Unfold Cross Section Enhancements
- GTOL Enhancements
- Dimension and Tolerancing Enhancements
- Modify Model Edges Enhancement
- View Name Placement Enhancements
- Offset Notes Improvements
- Tapered Thread Enhancement
- Converting Draft Entities Improvement
- Draft Datum Improvements
- Draft Entities Improvements
- Bill Of Material Enhancements

Sheetmetal Enhancements

- Annotation Planes For Bend Notes
 - Sheetmetal Default Accuracy and Thickness Parameter
 - User-Defined Flange Wall Sections
 - User-Defined Flat Wall Sections
 - Add to Part Edge Option
-

COACH Update from Pro/ENGINEER Wildfire 2.0 to Pro/ENGINEER Wildfire 4.0

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2654
Course Length	16 Hours

Overview

In this course you will learn how to utilize many of the enhancements to core functionality in Pro/ENGINEER Wildfire 4.0. This course is intended as an update directly from Pro/ENGINEER Wildfire 2.0 to Pro/ENGINEER Wildfire 4.0, so some of the enhancements covered in this course were introduced in the Pro/ENGINEER Wildfire 3.0 release.

Prerequisites

Pro/ENGINEER Wildfire 2.0 users with a minimum of 500 hours of experience.

Topics

Introduction

Part Enhancements

- Navigator and Browser Enhancements
 - File Open Dialog Enhancements
 - Parameters Dialog Enhancements
 - One-By-One Selection
 - Exact Relation
 - Asynchronous Curve Creation
 - Draft Enhancements
 - Extend Enhancements
 - Swept Blend Dashboard
 - Swept Blend Enhancements
 - Warp Enhancements
 - Embedded Datum Features
 - Intent Datum Features Enhancements
 - Merge Enhancements
 - Partial Shell Option
 - Shell Enhancements
 - Hole Profile Options
 - Tapered Holes and Pipe Threads
 - Cosmetic Thread Enhancements
 - Remove Surface Feature
 - Auto Round
 - Part Parent/Child Information Enhancements
-

Part Feature Duplication Enhancements

- UDF Enhancements
- Intent-Based UDFs
- Copy/Paste Enhancements
- Group Enhancements
- Creating Curve Patterns
- Fill Pattern Enhancements
- Creating Patterns of Patterns
- Moving/Mirroring Patterns
- Reference Pattern Enhancements

Sketcher Enhancements

- Default Diameter Dimensions
- Locked/Modified Dimensions Enhancement
- Auto-Locking Dimensions
- Sketcher Line Style and Color
- New Sketcher Workflow
- Undo/Redo Reorient View
- Using Cut/Copy/Paste in Sketcher
- New Sketcher Palette
- Sketched Text Enhancements
- Sketcher Intent Object Referencing
- Replacing Sketcher References
- Sketcher Diagnostic Tools

Assembly Component Enhancements

- Component Assembly UI Enhancements
- Using the Component Dashboard for Constraints
- Using the Component Dashboard for Connections
- Component Transparency Enhancements
- Component Dashboard Options
- Component Drag Enhancements
- Active Component Enhancements
- Creating Component Interfaces
- Placing Single and Multiple Components using Interfaces
- Placing Components with Interface Rules

Advanced Assembly Enhancements

- Zone Enhancements
 - Axis Alignment Enhancements
 - Clipped State Enhancements
 - Frozen Component Enhancements
 - Assembly Family Table Enhancements
 - Data Sharing UI Enhancements
 - Miscellaneous Assembly Enhancements
 - Flexible Component Enhancements
 - Simplified Representation Enhancements
-

- Global Reference Viewer
- Replace Component Enhancements

Drawing Enhancements

- Drawing Template Enhancements
- Shaded Views
- View States
- 3D Sections
- Drawing Layer Enhancements
- Aligning and Centering Dimensions
- Diameter and Radius Dimension Enhancements
- Ordinate Dimension Enhancements
- Dimension Clipping Enhancements
- Drawing Annotation Enhancements
- Detailing Enhancements
- Cross Section Enhancements
- Full Unfold Cross Section Enhancements
- Set Datum and Control Frame Enhancements
- GTOL Enhancements
- Dimension and Tolerancing Enhancements
- Modify Model Edges Enhancement
- View Name Placement Enhancements
- Offset Notes Improvements
- Tapered Thread Enhancement
- Converting Draft Entities Improvement
- Draft Datum Improvements
- Draft Entities Improvements
- Bill Of Material Enhancements

Sheetmetal Enhancements

- Sheetmetal Reports in Browser
 - Annotation Planes For Bend Notes
 - Sheetmetal Default Accuracy and Thickness Parameter
 - Unattached Flat Wall Enhancements
 - User-Defined Flat Wall Sections
 - Unattached Extruded Wall Enhancements
 - Flange Walls On Non Tangent Edges
 - Flange Walls with Mitered Corners
 - User-Defined Flange Wall Sections
 - Solid and Sheetmetal Cuts
 - Add to Part Edge Option
-

Surfaces

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2655
Course Length	32 - 40 Hours

Overview

This self-study tutorial is for Designers who use Pro/ENGINEER to create and manipulate free-form surfaces. The Surfaces course teaches basic surfacing techniques as well as complex surface manipulation such as trimming, extending, editing and tweaking. In this course, you will learn how to control surface display and tangency conditions as well as modify surface attributes and display settings.

After completing this course, you will be able to create complex surfaces and manipulate them relative to solids.

Prerequisites

COACH for Modeling

Topics

Datum Points

- Single Reference
- Multiple References
- Sketched Points
- Offset Points

Datum Curves

- Sketched Datum Curves
- Datum Curves Thru Points
- Sweep Curves
- Projected on a Surface
- Copy Curve
- Curves from Equations

Basic Surfaces

- Basic Surfaces
- Capped Ends
- Flat Surfaces
- Surface Display
- Variable Section Sweep

Blended Surfaces

- Two Parallel Curves
-

- Several Parallel Curves
- Non-Parallel Curves
- Curves in 2 Directions
- Swept Blend

Working with Surfaces

- Merge
- Trim
- Solidify
- Offset
- Mirror
- Thicken

Advanced Surfaces

- Rounds
- Blend Control Points
- Tangency Conditions
- Extend Surface
- Extension Distance
- Warp Feature

Projects

- The Engine Cover
 - The Camera Body
-

Introduction to Mechanisms (MDX)

Software Version	Pro/ENGINEER Wildfire 4.0
Course Code	COA-CEK2660
Course Length	24-32 Hours

Overview

This self-study tutorial is for Designers already familiar with Pro/ENGINEER Wildfire 4.0. The Introduction to Mechanisms course covers the fundamentals of mechanism kinematics. In this course you will define mechanisms, make them move using servo motors, and analyze the motion.

Prerequisites

COACH For Modeling or equivalent.
COACH For Assemblies or equivalent.

Topics

Overview

- Terminology
- User Interface
- Mechanisms Example

Creating Mechanisms

- Defining Bodies
- Defining Joints
- Degrees of Freedom
- Motion Axis Settings

Simulating Motion

- Dragging Components
- Snapshots
- Controlling Components
- Snapshots in Drawings

Advanced Connections

- Cam-Follower Connections
 - Slot-Follower Connections
 - Gear-Pair Connections
-

Servo Motors

- Defining Servo Motors
- Defining Motion
- The Graph tool

Analyses

- Creating Analyses
 - Animating
 - Motion Output
 - Measurements
-