Mold Design using Creo Parametric 3.0

Overview

The Mold application provides the tools necessary to create a mold model from start to finish using the mold design process within Creo Parametric 3.0. In this course, you will learn how to create, modify, and analyze mold components and assemblies. Any changes made to the design model automatically propagate to the mold components and assemblies. You will also learn how to create final extract components that reflect the geometry of the design model, along with shrinkage considerations, adequate drafting, mold features, and cooling systems. After completing this course, you will have a better understanding of the mold design process and how to create molded products using the mold design process.

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

- Learn the basic mold process
- Prepare design models for the mold process
- Analyze design models to ensure their readiness for molding
- Create mold models
- Apply shrinkage to the reference model
- Create and assemble workpieces into the mold model
- Create mold volumes
- Create parting lines and parting surfaces
- Split mold volumes
- Extract mold components
- Create mold features
- Fill and open a mold
Prerequisites

- Introduction to Creo Parametric 3.0
- Basic understanding of mold design terminology and processes
- Knowledge of Creo Parametric surfacing techniques is a plus

Audience

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

## Day 1

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Course Content

Module 1. Introduction to the Creo Parametric Basic Mold Process
   i. Creo Parametric Basic Mold Process

Knowledge Check Questions

Module 2. Design Model Preparation
   i. Understanding Mold Theory
   ii. Preparing Design Models for the Mold Process
   iii. Creating Profile Rib Features
   iv. Creating Drafts Split at Sketch
   v. Creating Drafts Split at Curve
   vi. Creating Drafts Split at Surface

Knowledge Check Questions

Module 3. Design Model Analysis
   i. Analyzing Design Models Theory
   ii. Performing a Draft Check
   iii. Performing a Section Thickness Check
   iv. Performing a Thickness Check

Knowledge Check Questions

Module 4. Mold Models
   i. Creating New Mold Models
   ii. Analyzing Model Accuracy
   iii. Locating the Reference Model
   iv. Assembling the Reference Model
   v. Creating the Reference Model
   vi. Redefining the Reference Model
   vii. Analyzing Reference Model Orientation
   viii. Analyzing Mold Cavity Layout
   ix. Analyzing Variable Mold Cavity Layout
   x. Analyzing Mold Cavity Layout Orientation
   xi. Calculating Projected Area

Knowledge Check Questions

Module 5. Shrinkage
   i. Understanding Shrinkage
   ii. Applying Shrinkage by Scale
   iii. Applying Shrinkage by Dimension

Knowledge Check Questions

Module 6. Workpieces
   i. Creating Display Styles
   ii. Creating a Workpiece Automatically
iii. Creating a Custom Automatic Workpiece
iv. Creating and Assembling a Workpiece Manually
v. Reclassifying and Removing Mold Model Components

Knowledge Check Questions

Module 7. Mold Volume Creation
i. Surfacing Terms
ii. Understanding Mold Volumes
iii. Sketching Mold Volumes
iv. Creating Sliders using Boundary Quilts
v. Sketching Slider Mold Volumes
vi. Creating a Reference Part Cutout
vii. Sketching Lifter Mold Volumes
viii. Replacing Surfaces and Trimming to Geometry
ix. Sketching Insert Mold Volumes

Knowledge Check Questions

Module 8. Parting Lines
i. Understanding Parting Lines
ii. Creating an Automatic Parting Line Using Silhouette Curves
iii. Analyzing Silhouette Curve Options: Slides
iv. Analyzing Silhouette Curve Options: Loop Selection

Knowledge Check Questions

Module 9. Skirt Surfaces
i. Understanding Parting Surfaces
ii. Creating a Skirt Surface
iii. Analyzing Skirt Surface Options: Extend Curves
iv. Analyzing Skirt Surface Options: Tangent Conditions
v. Analyzing Skirt Surface Options: Extension Directions
vi. Analyzing Skirt Surface Options: ShutOff Extension

Knowledge Check Questions

Module 10. Parting Surface Creation
i. Analyzing Surface Editing and Manipulation Tools
ii. Merging Surfaces
iii. Creating a Shadow Surface
iv. Creating a Parting Surface Manually
v. Creating Saddle Shutoff Surfaces
vi. Creating Fill Surfaces
vii. Extending Curves
viii. Filling Loops
ix. Creating Shut Offs

Knowledge Check Questions
Module 11. Splitting Mold Volumes
   i. Splitting the Workpiece
   ii. Splitting Mold Volumes
   iii. Splitting Volumes using Multiple Parting Surfaces
   iv. Blanking and Unblanking Mold Items
   v. Analyzing Split Classification

Knowledge Check Questions

Module 12. Mold Component Extraction
   i. Extracting Mold Components from Volumes
   ii. Applying Start Models to Mold Components

Knowledge Check Questions

Module 13. Mold Features Creation
   i. Creating Waterline Circuits
   ii. Analyzing Waterline End Conditions
   iii. Performing a Waterlines Check
   iv. Understanding Mold Analysis Settings
   v. Creating Sprues and Runners
   vi. Creating Ejector Pin Clearance Holes
   vii. Creating UDFs
   viii. Placing UDFs

Knowledge Check Questions

Module 14. Filling and Opening the Mold
   i. Creating a Molding
   ii. Opening the Mold
   iii. Draft Checking a Mold Opening Step
   iv. Interference Checking a Mold Opening Step
   v. Viewing Mold Information

Knowledge Check Questions