Mastercam for SolidWorks

Course Description

This course assumes you have a basic understanding of SolidWorks ® and solid modeling, as well as a basic understanting of CNC machining and associated terminology.

In this course you will learn to program parts directly in SolidWorks, using toolpaths and machining strategies available in Mastercam ® for SolidWorks ®. Learn to use SolidWorks to create geometry for toolpath control using Mastercam for SolidWorks. Create toolpaths on mechanical parts and assemblies created in SolidWorks or any solid model imported into SolidWorks.

Module 1: Getting Started

Before generating toolpaths for a part, you must prepare Mastercam for SolidWorks and the part file. This preparation inlcudes such tasks as selecting a machine definition, defining a tool plane, and establishing toolpath parameters. This module introduces the Toolpath Manager and shows how to create a machine group and toolpath groups. You will learn to use SolidWorks for creating geometry, emphasizing geometric constraints with the intent of controlling the toolpath. This module will require a minimum of one geometry example.

Module Objectives:

- Mastercam and SolidWorks environment settings
- Start geometry: Part orientation
- Start geometry: Origin selection
- Z-plane control
- Create geometry: Geometric constraints
- Create geometry: Dimensional constraints
- Z-depth control
- Mastercam View Manager (tool plane)
- Toolpath Manager
- Machine Group properties
- Toolpath Manager editing
- Post CNC code
- Change geometry/Regenerate toolpath

Module 2: Design for Toolpaths

Use SolidWorks to create geometry, emphasizing geometric and dimensional constraints for the intent of controlling the toolpath. Learn design techniques to aid CNC toolpath production, create tool planes for rotary-axis machining, and control Z-plane orientation and part origin for CNC machining. This module will require a minimum of three geometry examples.

Module Objectives:

- Dimensional constraints
- Geometric constraints
- Mastercam View Manager (tool plane)
- Z-plane control
- Z-depth control
- Feature manager
- Feature associativity
- Feature constraints
- Hide features
- Supress features
- Design tree

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Module 3: Essential Machining - Parts

Learn toolpath strategies including profiling, pocketing, facing, area mill, drilling, and slot milling. Create toolpaths on solid design geometry created in SolidWorks or imported solid models (parts only). Learn toolpath control to produce efficient CNC code, make geometry modifications, and automatically update toolpaths. This module will require a minimum of four geometry examples.

Module Objectives:

- Contour toolpath
- Chaining manager
- Z-cut control
- Z-position control
- Lead-in / lead-out toolpaths
- Multi-cut
- Multi-pass
- Pocketing
- Area mill
- Drill toolpaths
- Multi-plane toolpath

Module 4: Feature Based Machining (FBM) Toolpaths

Feature Based Machining (FBM) automatically programs pockets, contours, and drilling routines. Learn FBM for feature machining with complete associativity of toolpath and designed features. Manage features for error-free feature recognition and quick CNC code production. This module will require a minimum of three geometry examples.

Module Objectives:

- FBM pockets, contours, and drilling
- Dynamic milling
- Plunge, helical, and ramp entry
- Pocketing styles: zigzag, one way, true spiral, constant overlap spiral, "morph" pocketing, open pocketing
- Contour and pocket remachining

Module 5: High Speed Toolpaths (HST)

High Speed Toolpath (HST) machining can deliver a faster turnaround and a superior finish. Mastercam for SolidWorks offers fully associative high speed machining techniques that produce efficient CNC code for today's high speed CNC machines. Learn HST techniques for shorter cycle time and better part finish. These toolpaths are a game changing material remocing strategy and can be used to remove material faster even on CNC machines that may not be designed for this technologyThis module will require a minimum of three geometry examples.

Module Objectives:

- 2D HST chaining
- Step over and depth of cut considerations
- Core mill
- Peel mill
- Multi-cut
- Blend mill
- Area mill
- Rest mill
- Dynamic mill

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Module 6: Mastercam for SolidWorks Reference Documents

Additional support material for using Mastercam for SolidWorks X4. In-depth command references and settings applied Mastercam commands, and working in the SolidWorks environment.

- Mastercam Configuration settings
- Chain manager
- Mastercam toolpath manager
- SolidWorks sketch planes
- Tool group properties

Materials Required

- High speed internet connection
- Computer that meets the Mastercam System Requirements
- Mastercam for SolidWorks and 32-bit version of SolidWorks

Course Schedule

Because this course is available online, it can be taken at any time and at your own pace. At an educational institution, this course would typically require approximately sixty hours (for example, three nights a week for six weeks). This includes lab time to complete all examples. Plan to spend three hours per session and allow two and a half hours to take the final practical test.

Multiple Choice Test Overview

There are pre- and post- multiple choice tests for both the design and toolpath sections of the course. You will receive a Certificate of Completion (PDF format) upon completion of the post-test, which will display the post-test grade. Students should have at least 30-45 minutes to complete the multiple choice question tests. These are supplied to review.

Cost

The cost of the Mastercam University Mastercam for SolidWorks course is $249.00.

Course Policies

- This course is designed for one student, but allows the lectures to be viewed by others.
- The Certificate of Completion will be stored at Mastercam University under your unique student ID number. It remains available for you to use as proof of work completed and grades received.
- You must also register at a regional college to receive college credit for the successful completion of this course.