



Lathe Design and Toolpaths

Course Description

The Mastercam University Lathe Design & Toolpaths course provides training that exceeds the minimum requirements for the first level of Mastercam Lathe Certification (Lathe-CPgmL) as defined by the Mastercam Certification Advisory Committee. This course is the baseline for Mastercam training at both major manufacturing companies and colleges throughout the United States. It is the equivalent of a 3-credit course at a college or university.

Course Objectives

Upon completion, you should be able to demonstrate:

Geometry

- Use of levels, colors, groups
- Lathe construction planes
- Use of 2D and 3D construction methods
- Modification of current geometry (trim, fillet, color, level, group, and attributes)
- Geometry Selection (pre/post selection)
- Creation of curves on solids
- Diameter/Radius part creation
- Geometry transformation (Scale, Rotate, etc.)

Solids

- Extrude, Primitive, Fillet, Revolve

Toolpath

- Efficient toolpath creation
- Use of holding in example parts
- Tool definition from nothing
- Depth of cut and feed rate based on tool and materials
- Appropriate toolpath operation for cutting application
- Saving custom tools to a level
- Stock setup
- Setup sheet creation including documentation of cutting with order of cuts
- Tail stock, stock and flip, bar feed, and part pick
- Internal and external operations for all Mastercam Lathe toolpaths

- Importing and exporting operations
- Toolpath group creation
- Machine group creation
- Backplot
- Quick Verify
- Verify section
- STL file creation and STL compare

Live Toolpaths

- C Axis toolpath overview
- C Axis Face Mill
- C Axis Face Drill
- C Axis Cross Milling
- Y Axis Contour

Operations Manager

- Configuration
- Geometry cut and paste
- Use of display settings
- Use of tool offset registry settings
- Use of Maximum RPM and feed rate
- Number of tools in the turret
- Understanding of RPM/FPR

Strongly Recommended Pre-requisites

- Print reading with multiple views
- CNC machining experience
- CNC set-up experience
- Algebra and trigonometry
- Mastercam experience



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Materials

The Lathe Design & Toolpaths course requires:

- High speed internet connection
- Computer that meets the [Mastercam System Requirements](#)
- Mastercam Demo/Home Learning Version, which you can download at Mastercam U

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. To get the most out of this class, 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 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 Lathe Design & Toolpaths 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.