



## Lathe Design & Toolpaths using Mastercam

Course Curriculum (Duration: 40 Hrs.)

### Chapter 1: Before you start using Mastercam

- a. Coordinate Systemes
- b. Conversions, Measurements, and Tools
- c. Machining Processes
- d. Lathe Machining
- e. Cutting Tools and Tool Holders
- f. Cutting Speeds, Feeds, and Revolutions per Minute (RPM)
- g. Chip Formation, Load, and Material Removal Rates
- h. Work Holding and Setup
- i. Introduction to CNC Part Programming

### Chapter 2: Basics of CAD/CAM & Introduction to Mastercam

- a. Introduction to CAD/CAM
- b. Advantages of CAD/CAM over conventional methods
- c. Mastercam Software Installation
- d. Mastercam Modules
- e. GUI
- f. Getting Help
- g. File Management
- h. File Conversions

### Chapter 3: Lathe Design

- a. Set the plane to diameter
- b. Create lines on diameter
- c. Create a groove
- d. Create a revolved solid
- e. Create dimensions
- f. Use radius blends
- g. Create chamfers
- h. Assignments

### Chapter 4: Lathe Setup

- a. Select a Lathe machine definition
- b. Set the Lathe machine group properties (tools, materials, stock, chuck, jaws, etc.)
- c. Set up a Lathe toolbar configuration
- d. Explore the Lathe toolbar icons
- e. Face, rough, finish, groove, and thread a part
- f. Cut the part off
- g. Verify all toolpaths
- h. Post process the operations to create the NC program (G-code)
- i. Assignments

### Chapter 5: Lathe Toolpaths

- a. Review Mastercam chaining as used for lathe machining
- b. Set up stock and chuck jaws
- c. Create geometry as necessary to program operations on a solid model
- d. Create a custom tool, tool holder, and tool library Flip stock
- e. Create and use a template and merge part geometry with a template
- f. Apply both standard and quick lathe toolpath operations
- g. Assignments
- h. Lathe Applications

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