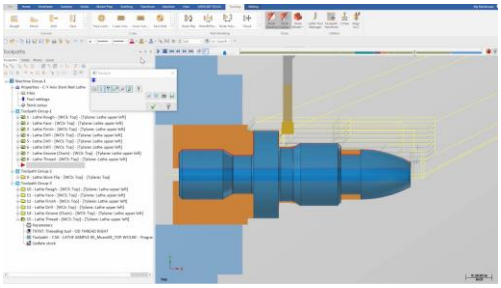
NC Programming & CAM

Intermediate Course
Duration: 5 Days (6 hours Per Day)

Objective of the Course:

This course covers Fundamentals and concepts of CNC Lathe & Machining center's, Safety Precautions while handling CNC, CNC part programming and CAM programing, Adequate practice of CNC Lathe & Machine in virtual environment to boost confidence of student, and then preparation of job on real CNC machine. This course offers more hands-on experience through which the participants will be developing CNC programs and machining complicated shapes by using the CNC machine simulator and then CNC Machine.



Course Outcome:

The participants will be able to:

- Understand fundamentals of CNC Machine
- Learn and Write CNC Part Programming
- Learn CAD Drawing and CAM Programing
- Learn safety precautions to be followed while operating machine
- Learn tool selection, workpiece mounting and its fixture, measuring instruments, tool compensation, offset and tool setting.
- Hands-on experience on CNC Simulator for job preparation
- Hands-on experience on CNC Machine for job preparation
- Preparation of reports

Module 1: Introduction to SSCNC and Mastercam Basics

Overview and Installation

- Introduction to SSCNC and its applications in CNC machining.
- Overview of Mastercam and its role in CNC programming.
- Installation and setup of SSCNC and Mastercam.

- Basic navigation through the SSCNC and Mastercam interfaces.

CNC Basics and Simple Geometry

- Basics of CNC machining and its principles.
- Understanding machine coordinates and work offsets.
- Creating a simple part geometry in Mastercam.
- Generating basic toolpaths in Mastercam.

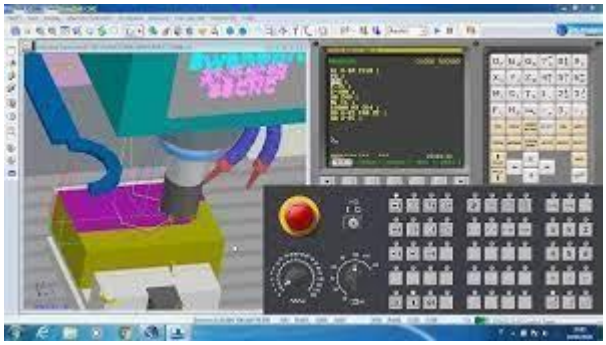
Module 2: Advanced Mastercam Functionality

Toolpaths and Strategies

- Tool library management in Mastercam.
- Introduction to machining strategies.
- Different types of toolpaths (2D and 3D).
- Customizing toolpaths for specific applications.

Simulation and G-code

- Mastercam simulation and verification.
- Understanding post-processing in Mastercam.
- Introduction to G-code and CNC machine language.
- Generating and reviewing G-code in Mastercam.



Module 3: SSCNC Programming Basics

SSCNC Setup and Programming

- Overview of SSCNC programming features.
- Setting up the machine parameters in SSCNC.
- Creating a new SSCNC program.
- Importing Mastercam-generated G-code into SSCNC.

Simulation and Verification

- SSCNC simulation and verification.
- Troubleshooting common programming errors.

- Fine-tuning toolpaths and parameters in SSCNC.
- Introduction to SSCNC machine control features.

Module 4: Practical Applications Part Cutting CNC

Project Design and Mastercam Setup

- Designing a practical project for CNC machining.
- Applying all learned concepts Part Cutting on CNC

Module 5: Practical Applications Part Cutting VMC

Project Design and Mastercam Setup

- Designing a practical project for CNC machining.
- Applying all learned concepts Part Cutting on VMC

Conclusion and Project Refinement

- Q&A session for troubleshooting and clarifications.
- Course conclusion and certificates distribution.