CNC Machine Technology - One Month Syllabus

Week 1: Introduction and Basics

1. Introduction to CNC Machines

   - Types of CNC Machines (Milling, Lathe, Grinding, etc.)

   - History and Evolution of CNC Technology

2. CNC Machine Components

   - Machine Bed, Spindle, Tool Changer, Controller

   - CNC Machine Axis (X, Y, Z)

3. CNC Programming Basics

   - G-codes and M-codes

   - Tool Path and Coordinate System

Week 2: CNC Programming and Tooling

1. CNC Programming

   - Writing and Simulating G-code

   - Tool Offsets and Compensation

2. Tooling and Tool Selection

   - Types of Cutting Tools

   - Tool Wear and Maintenance

3. Hands-on Practice

   - Simple CNC Programming and Execution

Week 3: Machine Operation and Troubleshooting

1. CNC Machine Operation

   - Machine Setup and Calibration

   - Running and Stopping Operations

2. Troubleshooting and Maintenance

   - Common CNC Machine Errors

- Machine Safety Protocols

3. Practical Session

  - Complex Part Manufacturing

Week 4: Advanced Concepts and Final Project

1. CNC Automation and CAD/CAM Integration

  - Introduction to CAD/CAM Software

  - CNC Simulation and Optimization

2. Final Project

  - Designing and Manufacturing a Custom Part

  - Presentation and Feedback