Machining Basics and CNC
Outline of Instruction

Course Information
Organization: Monroe County Community College, Applied Science and Engineering Technology
Developers: Bob Leonard
Course Number: MECH 103
Instructional Level: Associate Degree
Potential Hours of Instruction: 90
Total Credits: 4

Description
This course deals with the use, care and safety of hand tools, lay-out procedures and measuring instruments used in the lab for fundamental fabrication of industrial products. Basic theories and typical operation using the mill, lathe, and grinder for lab will be followed by into the introduction of the cartesian coordinate system and computer numerical control, (CNC). And applications on the CNC lathe, CNC mill & CNC electronic discharge wire machine, (EDWM) . Basic metallurgy is covered.

Major Units
Safety & Understanding Drawings
Measurement
Lay-out Work
Hand tools
Tapers and Screw Threads
Grinder, Mill & Lathe Operation
Heat Treat and Metal Finishing
Non Traditional Machining Techniques
Computer Numerical control (CNC)
CNC Word & Number Address

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tr>
<td>Classroom Presentation</td>
<td>30</td>
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<tr>
<td>On-Campus Lab</td>
<td>60</td>
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Textbooks
John Walker. Machining Fundamentals.

Learner Supplies
HSS cutting tools in bookstore.
Calculator with trigonometry functions.
folder for handouts.

Prerequisites
There is no prerequisite for this course

Course Outcomes
1. Describe mill, lathe and drill tooling with proper terminology
2. Identify common machine tools and their nomenclature
3. Identify set up procedures and tooling for CNC machining
4. Demonstrate knowledge using direct precision measuring devices to accurately measure parts
5. Identify basic G & M code programming
6. Analyze and correct simple improper programming commands
7. Demonstrate proper manual and CNC operation of CNC, Mill, Lathe and Wire EDM.
8. Identify all parts of a detail drawing and print requirements
9. Demonstrate and practice shop safety and recognize the importance of computers