

# SYLLABUS

**DIVISION:** Business and Engineering Technology

**REVISED:** Revised 2013

**CURRICULA IN WHICH COURSE IS TAUGHT:** Precision Machining Technology

**COURSE NUMBER AND TITLE:** MAC127 Advanced CNC Programming

**CREDIT HOURS: 3 HOURS/WK LEC: 3 HOURS/WK LAB: 0 LEC/LAB COMB: 3**

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**I. CATALOG DESCRIPTION:** Provides in-depth study of programming computerized numerical control machines.

**II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:**

- This Course teaches the manual programming of lathe and mill parts, including transferring the programs from a desktop computer to the CNC computer on the machining.

**III. REQUIRED BACKGROUND/PREREQUISITES:**

- MAC 121

**IV. COURSE CONTENT:**

The following items will be covered in this course, though not necessarily in this order:

1. Creating a G-code program to run a part on the Haas Lathe and the CNC Vertical Mill.
2. Creating operations of the part:
  - a. turning
  - b. facing
  - c. boring
  - d. parting
  - e. drilling
  - f. threading
  - g. tapping
  - h. grooving
  - j. milling
3. Ordering operations
4. Part documentation
5. Loading the program into simulators and executing a simulation of the part
6. Setting up the chuck, tooling and offsets to run a part
7. Loading the program into the HAAS lathe or Mill and running an actual part
8. Safety in using CNC lathes and mills.

**V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE (Place X by all that apply)**

  X   Communications

       Personal Development

  X   Critical Thinking

  X   Quantitative Reasoning

       Cultural & Social Understanding

       Scientific Reasoning

  X   Information Literacy

**VI. LEARNER OUTCOMES****VII. EVALUATION**

<b>Learner outcome</b> <ul style="list-style-type: none"><li>• Understand programming a part in G-Code</li><li>• Navigate the program from a desktop computer to the CNC machine using a disk, USB, and DNC</li></ul>	<b>Evaluation method</b> Lab exercises In class assignments
<b>Learner outcome</b> <ul style="list-style-type: none"><li>• Understand selecting speeds and feeds for various lathe tools such as turning, facing, boring, and milling</li></ul>	<b>Evaluation method</b> Lab exercises In class assignments
<b>Learner outcome</b> <ul style="list-style-type: none"><li>• Understand the setting of tool offsets and machine coordinates</li></ul>	<b>Evaluation method</b> Lab exercises In class assignments

**VIII. Over 90% of students will successfully complete this class.**