

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

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**

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

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