

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 21, 2023

I. CATALOG DESCRIPTION

Course Number: MACH1455
Course Title: CNC II & CAM
Prerequisite(s): MACH1349
Pre/Corequisite(s): MACH1428
Catalog Description: G and M code programming, operation, and setup of CNC machines.
Introduction to Computer Aided Manufacturing utilizing two and three-dimensional software.

Credit Hours: 5.5
Class Hours: 45
Lab Hours: 112.5
Total Contact Hours: 157.5

II. COURSE OBJECTIVES: *Course will:*

- A. Establish familiarity with operations, programming and setup of the applicable CNC machines.
- B. Demonstrate and practice the operation of CAM for two and three- dimensional parts.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Use proper syntax for required G-Code programming.
 - 2. Write a program and input or download the program to the CNC machine
 - 3. De-bug the program at the machine using the edit features of the CNC machine.
 - 4. Setup and tool the CNC machine to produce assigned work pieces.
 - 5. Create part geometry using CAM.
 - 6. Import drawings and produce a CNC program.
 - 7. Create programs for three- dimensional contours.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO 3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Programming
 - 1. Use of G-Codes to write a CNC program
- B. Verifying
 - 1. Utilizing codes to verify machine settings
 - 2. Apply correct values to offsets
 - 3. Utilize machine control to verify a program
- C. Operation
 - 1. Learning machine control panels
- D. Drawing
 - 1. CAM basics
- E. 2D
 - 1. CAM Programming
- F. 3D
 - 1. CAM Programming

V. INSTRUCTIONAL MATERIALS

- A. Handouts will be supplied by the instructor. No purchased book required.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
1. Lecture
 2. Small and large group discussion
 3. Video presentation
 4. Demonstrations
 5. On-line aids
 6. Handouts
 7. Observations
 8. Assigned lab projects
 9. Field trips

VII. METHODS OF EVALUATION (*course outline will provide more detailed information*)

- A. Methods of evaluations, although determined by the individual instructor, traditionally includes a combination of the following:
1. Notebook (if required)
 2. Quizzes
 3. Tests
 4. Lab grades
 5. Class participation

VIII. SPECIFIC COURSE REQUIREMENTS

- A. Completion of all tests, projects, assignments, and notebook (if required).
B. Program shop safety rules will be followed. Please see the course outline for any additional safety rules established by the instructor.