

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 23, 2021
[Syllabus Statements](#)

I. CATALOG DESCRIPTION

Course Number: MACH1455
Course Title: CNC II & CAM
Prerequisite(s): MACH1349
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. Required Text(s): *Mastercam 2018 Training Guide*, ISBN: 978-1-988766-03-4 (may differ depending on most recent software version)

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.