JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Advanced CNC Programming

Course Abbreviation and Number: MCT 2280   **Credit Hours:** 3   **Course Type:** Lecture/Lab

Course Description: Students will continue learning computer numerically control (CNC) programming, but move into advanced programming of three, four, and five-axis CNC machines. CAD/CAM is introduced and illustrated. Students will be exposed to Fanuc and Haas controllers.

Prerequisites: MCT 1280 Eligibility MAT 1590.

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Demonstrate knowledge of system requirements for programming CNC.
2. Explain axis labels and orientation on mill, lathes, and EDM's.
3. Explain parametric programming with variable programs.
4. Explain parametric programming with macros, main, and sub programs.
5. Explain geometry construction and cutter path generation.
6. Explain post processing and file data transfer options.

Topics Covered:

- Review of programming fundamentals
    - Axis labeling
    - G-Codes
    - M-Codes
    - Letter Address
    - Symbols
    - Program structure and limits
- Axis Labels and orientation
    - Rotary axis on VMC
    - B axis for Live tooling Lathe (Polar)
    - C axis for Live tooling Lathe (Cylindrical)
    - U,V axis for Wire EDM
    - Bar feeder
    - Bar puller
    - Sub Spindle
    - Swiss Turn tooling
- Parametric Programming
    - Variable programs
    - Macro programs
    - Main and Sub program relation
    - Nesting and looping
    - Mathematical and resultant programs
- CAD/CAM
    - Introduction to various software and applications
    - Geometry construction
    - Cutter path generation
    - Post processor
    - File Data transfer options
- Various Prints and Parts for Programming by Students

Information for Students

- Expectations of Students
    - Civility Statement
    - Student Responsibility Statement
    - Academic Integrity Statement
- Accessibility Services
  Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- Get Help: JCC & Community Resources
- Emergency Closing Procedures
- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0

- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2023