



MTT 2330

Division: Career and Technical Education

Department: Machine Tool Technology

Course: MTT 2330

Title: Introduction to CNC

Catalog Description:

This course is for students seeking careers in CNC programming and operation. It introduces programming techniques such as conversational, G & M Code, and Dyna. Students learn about CAM software and how to generate code for CAM machines. Successful completers should be able to generate a process plan, a tool list, and a working program to produce the part from a print.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 8; Lecture: 3; Lab: 15

Clock/Hour Requirements: 270

Offered for Non-Credit: No

Prerequisites: MTT 122L

Corequisites: None

Justification:

This course teaches students computer numerical control (CNC) fundamentals approved by our program advisory committee and is comparable to UVSC MTT 2330.

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

- understand differences between conversational, G & M Code, Dyna, and CAM generated programs
- generate a process plan, tool list, and a working program to produce a part from a print
- know about tooling, offsets, and machine operation
- download a program into the machine and do the editing on the machine.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- shop safety
- computer introduction
- conversational programming
- incremental and absolute programming
- G & M Codes

- Dyna programming
- tool change and offsets
- program development
- circular interpolation
- tooling types
- angular compensation
- angular programming
- canned cycles
- sub programs
- cutter compensation
- lathe programming
- radius programming
- cycles
- threads
- Mastercam.

General Education Outcomes:

- 4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media. Students will research projects through the *Machinery Handbook*, Internet, and company-specific websites. Specifications on material structure, machineability, and other details for a given job will need to be identified, evaluated, and interpreted before being applied to production.
- 6) Apply computational skills to a variety of contexts. Previously acquired mathematical skills will be applied in a lab setting. Students will be required to compute details of layout, reverse engineering, and programming as they prepare and complete a given project.
- 7) Apply scientific reasoning to a variety of contexts. Through the machining process, students are required to assess problems for possible solutions. Students will be involved in planning, design, and application of concepts they have learned in order to arrive at a quality-controlled product. Students will need to apply these skills to specific projects in order to arrive at the most efficient solution.

Key Performance Indicators:

In class:

- Students demonstrate safety practices while working in the shop.
- The student's knowledge and skills are tested by the ability to complete assignments with a required 75% minimum accumulated score.
- Written tests and quizzes are given on major subject areas with a required 75% minimum accumulated score.

Following class:

- Upon completion of the course, competency will be demonstrated in subsequent courses and on projects.

- William W. Luggen, *CNC A First Look Primer*, current edition, Delmar Publishers.

Optimum Class Size: 10

Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

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I hereby find this course consistent with the goals and resources of the Machine Tool Technology Department:

Alan Hart, AAS, Instructor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)