MAC 124 CNC Milling

COURSE DESCRIPTION:

Prerequisites: MAC 121

Corequisites: None

This course introduces the manual programming, setup, and operation of CNC machining centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC machining centers.

Course Hours Per Week: Class, 1. Lab, 3. Semester Hours Credit, 2.

LEARNING OUTCOMES:

Upon completion of this course, the student will be able to:

a. Understand the procedures and concepts of programming, set up and operation of a CNC Mill.
b. Identify and understand the programming codes.
c. Create geometry and toolpaths from the specifications on a blueprint for simple parts using programming software.
d. Identify and define the functions of the CNC machine control.
e. Set up the CNC machining center for manufacturing parts
f. Manufacture parts on the CNC machining center.

OUTLINE OF INSTRUCTION:

I. CNC Mill
    A. Machine CNC system description
    B. Axis designation/coordinate system
    C. Code description/data format
        1. G codes
        2. M codes
        3. S and F codes
    D. Tooling and setup procedures
        1. Z length and diameter set
        2. Reference, tool change and special point set locations
        3. Tooling safety
        4. Tooling menus
    E. Control orientation
        1. Start-up procedures
        2. Diagnostic checks
        3. Menu format
    F. Operation procedures
        1. Manuscript reading
        2. Program editing

    a. speed/feed overrides
    b. dimensional changes
3. Manual data input (MDI)
4. Set-up tooling procedures
5. Operation of CNC mills and Machining Centers

REQUIRED TEXTBOOK AND MATERIAL:

None

The instructor will use various handouts generated by Durham Tech for operation and programming of CNC mill.