

Common Course Outline
CAMM 252
COMPUTER NUMERICAL CONTROL
(CNC) MILLING MACHINE OPERATION
3 Semester Hours

The Community College of Baltimore County

Description

Computer Numerical Control (CNC) MILLING MACHINE OPERATION

Discusses theory and operation of CNC milling equipment in a production environment; includes machine control alignment, fixed cycle subroutine usage, CRT layout, hands-on operation and demonstrations on FADAL CNC Machining Centers.

Prerequisite: CAMM 111

Overall Course Objectives

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

1. Set-up and operate a FADAL CNC Machining Center.
2. Write a working part program for a CNC Machining Center using Absolute and Incremental positioning.
3. Construct programs using subroutines and canned cycles.
4. Demonstrate safe and practical machining techniques.
5. Use formulas to calculate RPM, IPR, IPM, HP, and Radial engagement factors and circular interpolation reduction factors.
6. Identify the 3 basic machine axes.
7. Identify tools used on a CNC Mill in a production setting.
8. Identify the G & M codes used to program a FADAL Machining Center.

Major Topics

- I. Principles of CNC Milling
 - A. Linear interpolation
 - B. Speeds and feeds
 - C. Program storage and retrieval
 - D. Cutter Compensation

- II. Subroutines and Fixed Cycles
 - A. Drilling cycles
 - B. Tapping cycles
 - C. Helical interpolation

- III. Advanced Programming
 - A. Writing subroutines and subprograms
 - B. Parametric programming
 - C. Macro programming

- IV. Cutting Material
 - A. High speed machining
 - B. Dry machining
 - C. Basic Metallurgy
 - D. Analyzing tool failure
 - E. Copy milling

Course Requirements

Grading: The faculty member will determine grading procedures, and a student can expect a minimum of eight grades from at least four of the following categories:

1. Quizzes
2. Lab projects
3. Written paper
4. Homework assignments
5. Midterm exam
6. Class participation
7. Comprehensive final.

Other Course Information

This course is taught in a computerized environment.

Date Revised: 6/1/00