

Common Course Outline
CAMM 101
NUMERICALLY CONTROLLED MACHINES
3 Semester Hours

The Community College of Baltimore County

Description

Numerically Controlled Machines

Covers the basic principles of numerical control machines, the Cartesian Coordinate System, and related shop math; discusses the history and theory of numerical control, planning and applications along with the techniques of programming.

Prerequisite: CAMM 111

Overall Course Objectives

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

1. Describe and make use of the Cartesian Coordinate System.
2. List the advantages of Numerical Control.
3. Describe Absolute and Incremental positioning.
4. Manually create a working part program for a CNC Machining Center.
5. Describe the difference between point-to-point and continuous path systems.
6. Debug a CNC program.
7. List the advantages and disadvantages of Open and Closed Loop Systems.
8. Identify the 3 basic machine axes.
9. Display the use of shop related math necessary for programming a CNC machine.
10. Make use of CNC software to verify programs.

Major Topics

- I. Introduction to NC Machines
 - A. History of NC
 - B. Development of NC
 - C. Program storage
 - D. Tape drives

- II. NC Systems
 - A. Point-to-point systems
 - B. Continuous path systems
 - C. Open and closed loop systems

- III. Shop Math
 - A. Cartesian Coordinate system
 - B. Absolute and Incremental positioning
 - C. Basic Trigonometry

- IV. Programming FANUC Language
 - A. Modal and non-modal commands
 - B. Linear and circular interpolation
 - C. Cutting angles
 - D. Drilling holes and patterns
 - E. Cutter Compensation

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