

# Common Course Outline

CAMM 202

## Advanced CNC Programming

3 Credits

### Community College of Baltimore County

#### Description

**CAMM 202 – Advanced CNC Programming** discusses computer operations and commands necessary to use a Computer Aided Manufacturing (CAM) software for programming, editing, storing, and retrieving programs for Computerized Numerical Control (CNC) machines. This course covers 3-D mill, surfaces, solids, and job set-up for surface machining and advanced CNC lathe programming using the C and Y axes.

#### **3 Credits**

**Prerequisites:** CAMM 101 and CAMM 111 and CAMM 201 with a passing grade of “C” or higher or CAMM 101 and CAMM 201 with a passing grade of “C” or higher and NIMS “Measurement, Material and Safety” certification.

#### Overall Course Objectives

Upon completion of this course, students will be able to:

1. describe and use windows commands;
2. use the CAM software package to edit programs;
3. import and export CAD files, solids, and surfacing formats;
4. describe basic solid and surfacing types;
5. create surfaces;
6. edit surface and solid geometry to correct tool-paths;
7. create new tooling to be used in CAM software;
8. assign tool path to part graphics;
9. import 3-D geometry;
10. create tool paths from sketches, CAD files, and drawings;
11. create a CNC program by using CAM software;
12. edit post processor; and
13. save programs to be transferred to CNC equipment.

#### Major Topics

- I. Introduction to Operating System
  - A. Version of windows
  - B. Setting up file locations and retrieving files
  - C. File extensions and surfaces
- II. CAM Systems

- A. 2-D and 3-D programs
- B. Contour and pocketing routines for 3-D surface programs
- III. Creating Tool-Paths and Working with Assorted CNC Machines
  - A. Using the CAM system with various CNC machines
  - B. Using libraries of parts
  - C. Using rotary axis and lathe live tooling.
- IV. Programming for live tooling and 3-D milling
  - A. Using the C and Y axes
  - B. Lead and lag turning
  - C. Adding operation and function
  - D. Setting up 3-D mill fixtures and other holding solutions

### **Course Requirements**

Grading procedures will be determined by the individual faculty member but will include the following:

### **Grading/exams**

- Minimum of 6 classwork assignments
- Minimum of 2 quizzes
- Minimum of 10 homework assignments
- Class participation
- 1 Midterm
- 1 Final exam

Written Assignments: Students are required to use appropriate academic resources.

### **Other Course Information**

This course is taught in a computerized environment.