

Common Course Outline

CAMM 253

CNC Lathe Operation

3 Credits

Community College of Baltimore County

Description

CAMM 253 – CNC Lathe Operation covers the theory and operation of Computerized Numerically Control (CNC) lathe in a production environment that emphasizes set-up, part programming, tooling selection, and hands on operation of various CNC lathes.

3 Credits

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

Overall Course Objectives

Upon completion of this course, students will be able to

1. identify the basic parts of a CNC lathe and utilize their functions;
2. identify and apply the coordinate operating system as it applies to CNC lathes;
3. safely operate the CNC lathe in manual and automatic modes;
4. write a working part program for a CNC lathe;
5. select and set tooling up as per part program;
6. secure part in the CNC lathe as per part program;
7. construct programs using subroutines and canned cycles;
8. demonstrate safe and practical machining techniques;
9. use formulas to calculate RPM, IPR, IPM, HP, and constant surface footage;
10. identify the G and M codes used to program a CNC lathe;
11. have the opportunity to earn the NIMS Level 1 “CNC Turning Operations” certification;
and
12. prepare for the National Institute of Metalworking Skills (NIMS) Level 1 CNC Turning: Programming and Operations” certification.

Major Topics

- I. CNC Lathe Principles
 - A. CNC lathe hardware
 - B. CNC lathe operation
 - C. CNC lathe controls
- II. Lathe Programming
 - A. Developing and writing of CNC programs
 - B. Programming angles and radius features
 - C. Threading routines

- D. Sub routines
- E. Drilling and boring operations
- F. Special operations

III. Shop Math

- A. Lathe coordinate system
- B. Absolute and incremental positioning
- C. Speed and feed calculations
- D. Calculation of angles and radius programming

Course Requirements

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

Grading/exams

- Minimum of 2 turning projects
- Minimum of 2 quizzes
- Minimum of 8 homework assignments
- 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 lab environment.