

Common Course Outline

CAMM 111

Machine Tool Processes I

4 Credits

Community College of Baltimore County

Description

CAMM 111 – Machine Tool Processes I provides instruction and practice in the theory and operation of engine lathes, vertical milling machines, surface grinders, selected other machine tools, as well as the function and use of basic precision measuring tools. This includes basic processes and procedures of metal machining.

4 Credits

Overall Course Objectives

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

1. identify major machine tools;
2. demonstrate use of machine safety and personal protective equipment;
3. describe the capabilities and functions of machine tools;
4. identify and select cutting tools appropriate to their function and use;
5. demonstrate the use and proper care of tooling and measuring equipment;
6. calculate feeds and speeds for cutting tools;
7. sharpen tooling to the correct geometry;
8. create machined parts to print specifications;
9. demonstrate accurate use of basic measuring devices;
10. set-up and operate engine lathes, vertical milling machines, and pedestal grinders;
11. evaluate finished lab projects as per specifications and list deficiencies; and
12. prepare for the National Institute of Metalworking Skills (NIMS) Level 1 “Measurement Material and Safety” certification.

Major Topics

- I. Precision measuring tools
 - A. The machinist scale
 - B. The micrometer
 - C. The Vernier caliper
 - D. The Vernier height gauge
- II. The engine lathe
 - A. Safety
 - B. The 4-jaw chuck
 - C. The 3-jaw chuck
 - D. Collet chucks

- E. Cutting tools
 - F. Speeds and feeds
 - G. Lathe centers
 - H. Basic operations
- III. The vertical mill
- A. Safety
 - B. Head alignment
 - C. Work holding
 - D. Work alignment
 - E. Speeds and feeds
 - F. Cutting tools
 - G. Edge finding
 - H. Basic operation
- IV. The pedestal grinder
- A. Safety
 - B. Dressing and truing
 - C. Basic grinding operation

Course Requirements

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

Grading/exams

- Minimum of 2 milling and turning projects
- Minimum of 2 quizzes
- Minimum of 15 homework assignments
- 1 Mid-term
- 1 Final exam

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

Other Course Information

This course uses ToolingU as the online resource.

This course is a prerequisite for other CAMM courses.

The student must receive a minimum passing grade of a “C” to satisfy future prerequisite requirements.

Students who already possess the (NIMS) Level 1, Measurement Material and Safety certification are not required to take this course.