

# Common Course Outline

CAMM 112

## Machine Tool Processes II

4 Credits

### Community College of Baltimore County

#### Description

**CAMM 112 – machine Tool Processes II** provides instruction and practice in the theory, 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 course discusses intermediate processes and procedures of metal machines.

#### **4 Credits**

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

#### Overall Course Objectives

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

1. set-up and operate engine lathes, vertical milling machines, and surface grinders;
2. create and use their own cutting tools for engine lathes;
3. construct simple and complex set-ups for projects;
4. choose the process that is the most efficient and will achieve the required finishes;
5. calculate feeds and speeds for various work materials and cutting tools;
6. select the proper machine for the job;
7. create precision machined parts to specifications;
8. demonstrate accurate use of precision measuring devices;
9. evaluate finished lab projects as per specifications and list deficiencies;
10. use a hand drill to produce a precision hole in a precise location;
11. understand fit, form and function;
12. prepare for the National Institute of Metalworking Skills (NIMS) Level 1 “Bench work and Layout” certification; and
13. prepare for the National Institute of Metalworking Skills (NIMS) Level 1 “Drill Press” certification.

#### Major Topics

- I. Precision measuring tools
  - A. Using the machinist scale
  - B. Using the micrometer
  - C. Using the vernier caliper
  - D. Using the vernier height gage
- II. The engine lathe

- A. Safety
  - B. Setting up the 4-jaw chuck
  - C. Advanced cutting tools
  - D. Speeds and feeds
  - E. Work support
  - F. Tool holding devices
- III. The vertical mill
- A. Safety
  - B. Head alignment
  - C. Work holding
  - D. Work alignment
  - E. Speeds and feeds
  - F. Cutting tools
  - G. The rotary table
  - H. The dividing head
- IV. The surface grinder
- A. Safety
  - B. Wheel selection
  - C. Dressing and truing
  - D. Squaring the work piece
  - E. Precision grinding
- V. Hand tools
- A. Hand drill
  - B. Drill bar
  - C. Filing

### **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 is taught in a laboratory environment.  
This course uses ToolingU as the online resource.