CAMM 111
Machine Tool Processes I
3 Credits (2 lecture hours and 3 lab hours)

Community College of Baltimore County
Common Course Outline

Description

CAMM 111– Machine Tool Processes I: provides instruction and practice in the theory and operation of lathes, milling machines, grinders, drill presses, and other manual machine tools. Students also learn the function and use of basic precision measuring tools, as well as the basic processes and procedures of metal machining.

Overall Course Objectives

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

1. identify major machine tools;
2. demonstrate machine safety and use of personal protective equipment;
3. describe the capabilities and functions of machine tools;
4. select appropriate cutting tools for a given application;
5. demonstrate the use and proper care of tooling 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 and proper care of basic measuring devices;
10. demonstrate proper set-up and operation of a variety of machine tools;
11. evaluate finished lab projects as per specifications;
12. identify deficiencies in lab projects not meeting specifications; and
13. prepare for the National Institute of Metalworking Skills (NIMS) Level 1 "Measurement Material and Safety" certification.

Major Topics

I. Safety
II. Precision measuring tools
    a. Machinist scales
    b. Micrometers
    c. Vernier calipers
    d. Vernier height gauges
III. Engine lathe
    a. 4-jaw chucks
    b. 3-jaw chucks
    c. Collet chucks

d. Cutting tools
e. Speeds and feeds
f. Lathe centers
g. Basic operation

IV. Vertical mill
a. Head alignment
b. Work holding
c. Work alignment
d. Speeds and feeds
e. Cutting tools
f. Edge finding
g. Head alignment
h. Basic operation

V. Pedestal grinder
a. Dressing and truing
b. Basic operation

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- Two projects
- Two quizzes
- Fifteen homework assignments
- Mid-term Exam
- Final exam

Other Course Information

This course uses an additional online resource which students will use to complete assignments outside of class. 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.

Date Revised: 2/16/2021