

Common Course Outline

CAMM 251

Measuring AND Gauging

3 Credits

Community College of Baltimore County

Description

CAMM 251 – Measuring and Gauging covers basic practices of standard measuring and gauging with emphasis on the Coordinate Measuring Machine (CMM).

3 Credits

Prerequisites: CAMM 111 with a passing grade of a “C” or higher or NIMS “Measurement, Material and Safety” certification and CAMM 156 with a passing grade of a “C” or higher.

Overall Course Objectives

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

1. describe and make use of the optical comparator to check datum's, holes, and radii;
2. list the advantages of using the CMM when performing a quality check;
3. describe the major features of the CMM;
4. create a SPC chart for documentation of a machined part;
5. explain SPC terminology;
6. inspect machined parts using a surface plate, an angle plate, a sine bar, and a dial indicator;
7. interpret Geometric Dimensioning and Tolerancing (GD&T) symbols and describe how to measure parts dimensioned using them;
8. program the CMM to inspect parts;
9. use the manual CMM to check part specification;
10. use the programmable CMM to inspect parts to specification; and
11. create an inspection plan.

Major Topics

- I. Graduated measuring instruments
 - A. The micrometer
 - B. The height gage
 - C. The vernier caliper
 - D. The dial indicator
 - E. Bevel protractor
 - F. Bore gages
- II. Gages
 - A. Comparison gages

- B. Fixed gages
- C. Adjustable gages
- III. Measuring equipment
 - A. The CMM
 - B. The optical comparator
 - C. Rockwell tester
- IV. Measurement
 - A. Keys and keyways
 - B. Chamfers and countersinks
 - C. Tapers
 - D. Dove tails

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 and lab environment.