

SYLLABUS

DIVISION: Business and Engineering Technology

REVISED: Fall 2014

CURRICULA IN WHICH COURSE IS TAUGHT: Precision Machining Technology

COURSE NUMBER AND TITLE: MAC 209 – Standards, Measurements, & Calculations

CREDIT HOURS: 3 HOURS/WK LEC: 3 HOURS/WK LAB: 0 LEC/LAB COMB: 3

I. CATALOG DESCRIPTION:

- Presents typical mathematical and mechanical problems requiring the use of various tools and/or gauges as well as reference sources such as the Machinery's Handbook for solution.
- Presents the use of the Coordinate Measuring Machine for precise and efficient quality assurance of machined parts.

II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:

- This course emphasizes quality control and the instruments used to verify it.

III. REQUIRED BACKGROUND/PREREQUISITES:

- MAC 221

IV. COURSE CONTENT:

1. Systems of Measurement
 - a. English
 - b. SI (Metric)
 - c. Conversions
2. Measuring Instruments
 - a. Calibration
 - b. Use
 - c. Care
 - d. Angular measurements
 - e. Sine bars
 - f. Gage blocks
 - g. Plug and ring gages
 - h. Effects of temperature
3. Geometric Dimensioning and Tolerancing
 - a. Symbols
 - b. Feature Control Frame
 - c. Form Tolerance
 - i. Straightness
 - ii. Flatness
 - iii. Circularity (Roundness)
 - iv. Cylindricity
 - d. Profile
 - i. Profile of a Line
 - ii. Profile of a Surface
 - e. Orientation
 - i. Angularity
 - ii. Perpendicularity
 - iii. Parallelism
 - f. Location
 - i. Position
 - ii. Concentricity
 - iii. Symmetry
 - g. Runout
 - i. Circular Runout
 - ii. Total Runout
 - h. Supplementary Symbols
 - i. MMC
 - ii. LMC
 - iii. Projected Tolerance Zone
 - iv. Basic Dimensions
 - v. Datum Feature
 - vi. Datum Target

V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE (Place X by all that apply)

Communications

Personal Development

Critical Thinking

Quantitative Reasoning

Cultural & Social Understanding

Scientific Reasoning

Information Literacy

VI. LEARNER OUTCOMES

VII. EVALUATION

<p>Learner outcome</p> <ul style="list-style-type: none"> • Demonstrate the use of English and Metric measuring instruments. • Convert measurements between systems. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>
<p>Learner outcome</p> <ul style="list-style-type: none"> • Demonstrate proper use, calibration, and care of various measuring instruments and tools. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>
<p>Learner outcome</p> <ul style="list-style-type: none"> • Calculate angular measurements. • Calculate and wring gage block stacks • Demonstrate proper use of a sine bar. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>
<p>Learner outcome</p> <ul style="list-style-type: none"> • Demonstrate applications and use of plug and ring gages. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>
<p>Learner outcome</p> <ul style="list-style-type: none"> • Recognize geometric symbols and tolerancing methods and their applications. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>
<p>Learner outcome</p> <ul style="list-style-type: none"> • Understand the effects of temperature as it relates to metrology. 	<p>Evaluation method</p> <p>In class assignments Written tests</p>

VIII. Over 90% of students will successfully complete this class.