COURSE INFORMATION FORM

DISCIPLINE  CIMM
COURSE TITLE  Machining for Related Occupations

CR.HR  5  LECT HR.  2  LAB HR.  6  CLIN/INTERN HR.  ______  CLOCK HR.  ______

CATALOG DESCRIPTION
This course is designed to introduce the student to common machining practices. The student will learn layout, measuring tools, benchwork, machine setup and operation required to operate saws, drill presses, lathes and mills. This course is designed for the student pursuing degrees that require knowledge of machining.

PREREQUISITES
None

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:
1. Describe how manufacturing affects the workforce and the evolution of machine tools.
2. Describe the role of machinist.
3. Identify and apply safe work practices in the manufacturing environment.
4. Read and interpret drawings dimensioned in fraction, decimal and metric units.
5. Identify the basic geometric dimensioning and tolerancing symbols and the most common measuring tools used in manufacturing.
6. Measure using direct-reading instruments, transfer instruments, precision measuring instruments, surface plate instruments and comparison instruments.
7. Interpret blueprints and make a sketch from a finished workpiece.
8. Calculate tolerances from a blueprint.
9. Identify common geometric and tolerancing symbols.
10. Identify and use common layout tools safely to produce a layout.
11. Identify, select and use the proper hand tool for the operation.
12. Perform common operations using hand tools.
13. Identify, select and safely operate the appropriate sawing machine.
14. Identify, prepare and use the appropriate offhand grinding machine for the job.
15. Perform the proper care and maintenance of equipment.
16. Identify the parts of a band machine.
17. Identify, setup and safely operate the correct band machine for the job.
18. Identify and select the proper tooling, setup and safely operate a drill press.
19. Identify the parts of and describe how a milling machine operates.
20. Sharpen a drill using the pedestal grinder.
21. Identify, select the proper tooling, setup and safely operate a milling machine.
22. Calculate milling speeds and feeds.
23. Identify and describe the parts of a lathe and describe how a lathe operates.
24. Identify, select the proper tooling, setup and safely operate a lathe.
25. Grind and sharpen lathe-cutting tools using a pedestal grinder.
26. Calculate lathe speeds and feeds.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Students will demonstrate the ability to apply foundational skills in an industrial setting, safely and to industry guidelines.
2. Students will think critically and apply problem-solving skills.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

Classroom Discussion/Participation: (1, 2)
Report and Presentation: (2)
Lab Demonstrations: (15, 17, 20, 21, 23, 25)
Assignments/Labs: (3-14, 16-26)
Written Exam: (3 at 100% on a safety test, 4-14, 16-26)
COURSE OUTLINE FORM

CATALOG NO. CIMP 130

DISCIPLINE CIMP

COURSE TITLE: Machining for Related Occupations

Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction to machining technology
   A. Manufacturing and the workforce
   B. Evolution of machine tool
   C. Role of machinist

II. Shop safety

III. Occupations in machining technology*

IV. Understanding drawings
   A. Fractions, decimal and metric units in drawings
   B. Geometric dimensioning and tolerancing symbols

V. Measurement
   A. Common measurement tools
   B. Direct reading instruments
   C. Transfer instruments
   D. Precision measuring instruments
   E. Surface place instruments
   F. Comparison instruments

VI. Layout
   A. Blueprints and workpiece
   B. Tolerances

VII. Hand tools

VIII. Fasteners

IX. Offhand grinding

X. Sawing and cutoff machines

XI. Band machining
   A. Parts
   B. Setup, operations and safety
   C. Selecting correct machine for the job
   D. Proper care and maintenance

XII. Drills and drilling machines
   A. Parts
   B. Setup, operations and safety
   C. Tooling
   D. Selecting correct machine for the job
   E. Sharpening with pedestal grinder
XIII. Lathes
   A. Parts
   B. Setup, operations and safety
   C. Grind and sharpen lathe-cutting tools using a pedestal grinder

XIV. Milling machines
   A. Setup, operations and safety
   B. Calculating mill speeds and feeds
   C. Tooling
   D. Selecting correct machine for the job