

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 21, 2023

I. CATALOG DESCRIPTION

Course Number: MACH1428
Course Title: Precision Machine Lab IV
Prerequisite(s): MACH1324
Pre/Corequisite(s): MACH1455
Catalog Description: Advanced projects to improve proficiency on the various machine tools.
Credit Hours: 4.5
Class Hours: 15
Lab Hours: 158
Total Contact Hours: 173

II. COURSE OBJECTIVES: *Course will:*

- A. Enhance proficiency in the use of lathes, milling machines, surface and cylindrical grinders, drill presses, cylindrical squares and various measuring instruments.
- B. Discuss and practice the processes involved with precision grinding.
- C. Identify and practice the techniques and processes of heat treating tool steel.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Produce threads on a lathe.
 - 2. Cylindrically grind diameters to tolerances of +/- .0002.
 - 3. Precision grind a part within required geometric tolerances of squareness and parallelism to tolerances of +/- .0002.
 - 4. Heat treat small components for various projects to the proper hardness.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO 5: Analytical, Quantitative and Scientific Reasoning
Outcome 4: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce a meaningful outcome.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. Mill
 - 1. Accurate sequences and milling of pre-designed projects
 - 2. Drilling, tapping, reaming, and facing
- B. Lathe
 - 1. Accurate sequences and turning of pre-designed projects
 - 2. Drilling, tapping, reaming, boring, and threading
- C. Grinding
 - 1. Surface grinding projects to +/- .0002. tolerance
 - 2. Cylindrical grinding projects to +/- .0002. tolerance

V. INSTRUCTIONAL MATERIALS

- A. Prints and Handouts will be supplied by the instructor. No purchased book required.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lecture

2. Small and large group discussion
3. Video presentation
4. Demonstrations
5. Handouts
6. Observations
7. Assigned lab projects
8. Field trips

VII. METHODS OF EVALUATION (*course outline will provide more detailed information*)

- A.** Methods of evaluations, although determined by the individual instructor, traditionally includes a combination of the following:
1. Notebook (if required)
 2. Quizzes
 3. Tests
 4. Lab grades
 5. Class participation

VIII. SPECIFIC COURSE REQUIREMENTS

- A.** Completion of all tests, projects, assignments, and notebook (if required).
- B.** Program shop safety rules will be followed. Please see the course outline for any additional safety rules established by the instructor.