

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 22, 2022

I. CATALOG DESCRIPTION

Course Number: MACH1324
Course Title: Precision Machine Lab III
Prerequisite(s): MACH1226
Catalog Description: Practice using machine tools: lathe, milling machine, surface grinder, and cylindrical grinder. High tolerance tool steel projects for lab work.
Credit Hours: 4.5
Class Hours: 15
Lab Hours: 158
Total Contact Hours: 173

II. COURSE OBJECTIVES: *Course will:*

- A. Demonstrate the use of lathes, milling machines, surface and cylindrical grinders, drill presses, squareness gages.
- B. Identify the processes involved with high precision tool making, error free machining.
- C. Demonstrate and practice the procedures necessary for proper heat treatment of tool steel.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Turn a taper on a lathe
 - 2. Cylindrically grind tool steels
 - 3. Produce a finished part 100% error free
 - 4. Heat treat a tool steel component to the proper hardness
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO 5: Analytical, Quantitative and Scientific Reasoning
Outcome 1: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations

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

- A. Mill
 - 1. Accurate squaring of pre-designed projects
 - 2. Accurate drilling, tapping, reaming, power tapping etc. of pre-designed projects
- B. Lathe
 - 1. Turning, drilling, tapers, knurling and threading of pre-designed projects
- C. Grinding
 - 1. Accurate surface grinding, and adjacent edge grinding of pre-designed projects
 - 2. Accurate cylindrical grinding of pre-designated projects

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): W.E. Bryson, *Heat Treatment, Selection, and Application of Tool Steels*, (Refer to CID and/or instructor for current edition)

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. On-line aids
5. Demonstrations
6. Handouts
7. Observations
8. Assigned lab projects
9. 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 projects grades
 5. Field trip

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.