

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 22, 2022
[Syllabus Statements](#)

I. CATALOG DESCRIPTION

Course Number: MACH1226
Course Title: Precision Machine Lab II
Prerequisite(s): MACH1175
Catalog Description: Practice using machine tools. Drill press, lathe, milling machine, surface grinder and cylindrical grinder.
Credit Hours: 3.5
Class Hours: 15
Lab Hours: 112.5
Total Contact Hours: 127.5

II. COURSE OBJECTIVES: *Course will:*

- A. Develop proficiency on such machine tools as the drill press, lathe, milling machine surface grinder and cylindrical grinder.
- B. Apply the classroom theory to help solve routine problems on daily lab projects.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Calculate proper speeds and feed for all machining operations.
 - 2. Single point thread internal and external UN and Acme threads using lathe.
 - 3. Grind boring and threading tools to machine assigned projects.
 - 4. Set-up lathes to machine components between centers.
 - 5. Produce angles and tapers using both compound rest.
 - 6. Indicate a four jaw chuck on a lathe.
 - 7. Drill, ream, bore, tap, counterbore and countersink on a lathe.
 - 8. Precisely bore and position holes using a boring head and digital readout on vertical mill.
 - 9. End mill keyseats on shafts and broach keyseats in a bore.
 - 10. Position drilled holes and counterbore or countersink to proper depths.
 - 11. Operate surface grinder using magnetic chucks.
 - 12. Set-up and grind straight and on cylindrical grinder.
- 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. Students will complete assigned projects using the following machine tools.
 - 1. Lathe
 - a. Turning and boring with HSS & inserted carbide tooling
 - b. Single point threading both O.D. I.D.
 - c. Taper turning
 - 2. Mill
 - a. End, face & slot milling with HSS & inserted carbide tooling
 - b. Hole locating drilling, reaming, use of boring head for boring

3. Drill Press
 - a. Center drill, pilot drill, drill to size and location
 - b. Counterbore and countersink to depth
4. Grinders
 - a. Surface grinding parallel and angular surfaces
 - b. Cylindrical grinding both parallel

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): None
- B. Other Resources: 3 Ring Notebook, note taking materials and a Calculator
- C. Students will be assigned project prints that they will be required to complete.

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. Project boards
 6. Internet resources
 7. Handouts
 8. Observations
 9. Assigned lab projects
 10. 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. Please see the course outline for attendance regulations established by the instructor.
- C. Program shop safety rules will be followed. Please see the course outline for any additional safety rules established by the instructor.