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:	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.** Turing, 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.