SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 23, 2021
Syllabus Statements

I. CATALOG DESCRIPTION

Course Number:	MACH1175
Course Title:	Precision Machine Lab I
Prerequisite(s):	None
Corequisite(s):	MACH1121
Catalog Description:	Basic operation of the lathe, milling machine, and grinder. Experience with hand tools, metrology, metal sawing, drilling and tapping.
Credit Hours:	3.5
Class Hours:	15
Lab Hours:	112.5
Total Contact Hours:	127.5

II. COURSE OBJECTIVES: *Course will:*

A. Demonstrate safe operation of the basic machine tools.
B. Review how to read blueprints and lay out their assigned projects.
C. Familiarize student with the terminology, hand tools, precision tools, and layout tools used in the machining trades.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. Student Learning Outcomes: *Student will be able to:*
- **1.** Safely operate the four basic machine tools.
- **2.** Learn and understand terminology used in manufacturing.
- **3.** Accurately read precision measuring tools.
- **4.** Read blueprints and operate layout tools and equipment.
- **5.** Properly select and use hand tools.
- **6.** Calculate proper RPM for machining operations.
- **7.** Cut single point external threads on a manual lathe.
- **8.** Select proper tap drill size and hand tap internal threads.
- **9.** Offhand grind proper clearance and relief angles in HSS tool bits.
- **10.** Sharpen drill bit points manually with automatic drill point grinder.
- **11.** Layout and drill hole locations to specified print tolerances.

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. Offhand grinding
- **1.** Grind proper clearance and relief angles in HSS tool bits.

B. Mill
- **1.** Accurate squaring of pre-designed projects.
- **2.** Accurate drilling, tapping, reaming, etc. of pre-designed projects.

C. Precision Grinder
- **1.** Accurate surface grinding, and adjacent edge grinding of pre-designed projects.

D. Lathe
1. Turning, drilling, tapers, knurling, and threading of pre-designed projects.

V. INSTRUCTIONAL MATERIALS

A. There are no additional books needed for this class.

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. Safety
2. Cleanliness
3. Participation
4. Lab project grades

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.