

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Precision Machining & Automation Technology Program
Revision Date: August 26, 2019
[Syllabus Statements](#)

I. CATALOG DESCRIPTION

Course Number: MACH2510
Course Title: Automation Theory
Prerequisite(s): None
Catalog Description: Fundamentals of mechanical advantage, use of cylinders and motors and learning basics of pneumatic and relay logic.
Credit Hours: 2.0
Class Hours: 23
Lab Hours: 23
Total Contact Hours: 46

II. COURSE OBJECTIVES: *Course will:*

- A. Examine the various aspects of automation fundamentals such as how to calculate mechanical advantage and incorporating mechanisms into a design to accomplish a task.
- B. Identify the fundamentals of pneumatic components and electrical relays and how to incorporate them into a mechanical device.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Describe the 6 simple machines and how to calculate mechanical advantage.
 - 2. Calculate MA when derived from multiple simple machines hooked together.
 - 3. Design a simple pneumatic circuit.
 - 4. Design a simple relay logic circuit.
 - 5. Specify the desired pneumatic devices from various manufactures.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO 3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.

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

- A. Study of Mechanical advantage by learning about the 6 simple machines
- B. Learning how to draw a physical layout schematic for pneumatic and relay logic.
- C. Get physical experience plumbing pneumatic components and wiring relays using the trainer boards provided.

V. INSTRUCTIONAL MATERIALS

- A. No textbook is required for the course. Instructor handouts and information posted on the LMS are the main forms of static information.

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. Demonstrations
 - 4. Project boards

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. Project grades
 2. Participation/class conduct

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.