Course Information Form (CIF)

Course Code: MFX 130

Course Title: Basic Pneumatics I

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0303
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 0.5-1-1
Credit Hour Distribution:

Lecture: 0.5	Lab: 1	Clinical: 0	**Total: 1**

General Course Information

Catalog Description

Prepares learners to work intelligently in industry with pneumatic applications. Introduction to pneumatic power; key topics and skills in pneumatic power and safety, pneumatic circuits, and pneumatic schematics.

General Course Objectives

Prepares learners to work intelligently in industry with pneumatic applications.

Minimum Placement Levels

English	Reading	Math
Placement into ENG 098	Placement into CCS 098	Placement into MAT 059

Prerequisites

None

Methods of Evaluation

There will be 5 quizzes.

Instructional Materials and Additional Supplies

Amatrol course code

Course Content

General Learning Outcomes (GLOs)

- Creativity and Innovative Thinking: Students will design, present, and interpret materials, information, and ideas in innovative ways.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction to Pneumatics	1. Describe an application of pneumatics. 2. Describe the functions of basic components of a pneumatic system. 3. Define pneumatic pressure and give its units of measurement. 4. Describe how to read a pressure gauge. 5. Read a pneumatic pressure gauge in PSI and kPa. 6. Describe the function of a pneumatic schematic.	0.5	1	0
Pneumatic Power	1. Explain six pneumatic safety rules. 2. Describe the function of a pressure regulator valve. 3. Describe the operation of a pressure regulator and give its schematic symbol. 4. Connect and adjust a pressure regulator. 5. Describe the function of an air filter. 6. Describe the operation of an air filter and give its schematic symbol. 7. Drain a pneumatic filter.	0.5	2	0
Circuit Connections	1. Describe the function of a pneumatic quick-connect fitting and give its schematic symbol. 2. Connect a pneumatic hose that uses quick-connect fittings. 3. Describe the function of a tee and a cross and give their schematic symbols. 4. Use a tee to connect two circuit branches together. 5. Use a cross to connect three circuit branches together.	0.5	2	0
Basic Cylinder Circuits	1. Describe the function of a pneumatic cylinder and give an application. 2. Describe the operation of a double-acting pneumatic cylinder and give its schematic symbol.	1	2	0
Basic Operation of a Double-Acting Cylinder	1. Describe the function of a 5-port, 3-position pneumatic directional control valve (DCV) and give an application. 2. Describe the operation of a 5-port, 3-position pneumatic DCV and give its schematic symbol. 3. Describe how DCVs are classified. 4. Describe the function of a DCV schematic. 5. Connect and operate a double-acting pneumatic cylinder using a 3-position, manually operated DCV. 6. Design a multiple cylinder pneumatic circuit.	1	2	0
Single-Acting Cylinder Circuits	1. Describe the function of a single-acting pneumatic cylinder and give an application. 2. Describe the operation of a single-acting, spring-return cylinder and give its schematic symbol. 3. Describe the function of a 3/2 pneumatic DCV and give an application. 4. Describe the operation of a 3/2 pneumatic DCV and give its schematic symbol. 5. Connect and operate a single-acting pneumatic cylinder using a 3/2 manually operated DCV.	1	2	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Basic Motor Circuits	1. Describe the function of a pneumatic motor and give an application. 2. Describe the operation of a pneumatic motor and give its schematic symbol. 3. Connect and operate a uni-directional pneumatic motor using a 3-port, manually operated DCV. 4. Describe the function of a muffler and give its schematic symbol. 5. List three common pneumatic motor designs and explain where they are used.	1	2	0
Pneumatic Schematics	1. Describe the line symbols used with fluid power circuits. 2. Identify pneumatic symbols. 3. Describe seven basic rules for drawing pneumatic schematics. 4. Draw a pneumatic schematic from the actual circuit connections on the machine. 5. Connect a pneumatic circuit given a schematic. 6. Design a multiple actuator pneumatic circuit.	2	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
7.5	15	0