Course Information Form (CIF)

Course Code: MFT 117

Course Title: Pumps, Compressors, and Vacuum Systems

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: 2-2-3
Credit Hour Distribution:

Lecture: 2	Lab: 2	Clinical: 0	**Total: 3**

General Course Information

Catalog Description

Theory and operation of centrifugal and metering pumps, piston and rotary type compressors, safety valves, pressure regulators, oil and water separators, and dryers. Vacuum pumps, surfaces and cups, gauges.

General Course Objectives

- Explain and demonstrate the operation of pumps, compressors, and vacuum systems and their components.
- Compare and contrast pumps, compressors, supporting equipment, and vacuum systems.
- Demonstrate the ability to operate and maintain these systems.

Minimum Placement Levels

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

Prerequisites

None

Methods of Evaluation

The minimum evaluation methods will include 12 lab exercises and 4 objective exams (including 1 final).

Instructional Materials and Additional Supplies

None.

Course Content

General Learning Outcomes (GLOs)

- 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
Pump Types and Application	1. List pump applications. 2. Compare and contrast pumps.	4	0	0
Pump Curves, Suction, Pressure and Flow, and Pressure and Flow Gauges	1. Discuss pump curves, suction, pressure, flow, and units of measure. 2. Describe gauge types and measurement. 3. Demonstrate the ability to interpret pump curves. 4. Properly select and install gauges.	4	4	0
Pump Installation and Alignment	1. Describe and demonstrate the proper procedures for installation and alignment of pumps.	4	4	0
Air Compressors - Piston and Rotary Types, PSI, and CFM	1. Summarize types of air compressors, advantages and disadvantages, working pressures, and CFM. 2. Demonstrate the startup, adjustment, and maintenance of compressors.	4	4	0
Oil and Moisture Separators, Dryers	1. List and compare different types of oil and moisture separators; dryers; and their effect on working pressures, CFM, and air quality. 2. Install, inspect, and maintain separators and dryers.	4	4	0
Vacuum Pumps	1. List and describe different vacuum pumps and their advantages and disadvantages. 2. Demonstrate the startup, adjustment, and maintenance of vacuum pumps.	4	5	0
Pressure Piping and Tubing for Liquids, Air, and Vacuum	1. Identify piping and tubing types used for transport of liquids, including sizing material and mechanical requirements. 2. Demonstrate the proper selection and installation of piping and tubing systems for pumps, compressors, and vacuum systems.	4	6	0
Vacuum Cups and Surfaces	1. Discuss vacuum cups and surfaces. 2. Calculate lifting power and proper application of cups and surfaces on material types. 3. Demonstrate the ability to select, install, inspect, and maintain vacuum cups and surfaces.	2	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0