

## Course Objectives/Course Outline

Spokane Community College

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Course Title: Pneumatic Theory

Prefix and Course Number: FLPT 121

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### Learning/Performance Outcomes:

By the end of this course, a student should:

- identify basic differences in transmitting power using compressed air rather than hydraulic oil
- identify all pneumatic components used in air circuits
- read machine pneumatic schematics and identify air power circuits and air control circuits
- calculate air volume CFM required to operate an air cylinder
- select and size air valves based on CV systems
- generate schematic drawings using pneumatic ISO symbols

### Course Outline

- I. Basic Pneumatic Principles
  - A. Air Composition
  - B. Air Pressure
  - C. Air Temperature
  - D. Symbols
  - E. Compressed Air
  - F. Comparison to Hydraulics
  - G. Safety Considerations
- II. Compressed Air Production
  - A. Types of Compressors
  - B. Selection
  - C. Regulation
  - D. Cooling
  - E. Distribution
- III. Air Preparation
  - A. Filters
  - B. Regulators
  - C. Lubricators
  - D. Dryers
- IV. Working Elements
  - A. Cylinders
    - 1. types
    - 2. mountings
  - B. Motors
  - C. Application
- V. Directional Valves
  - A. Poppet
  - B. Slide
  - C. Control
  - D. Sizing
  - E. Special Control Valves
- VI. Circuitry
  - A. Pneumatic Control
  - B. Electrical Control
  - C. Circuit Design
  - D. Troubleshooting