Course Objectives/Course Outline
Spokane Community College

Course Title: HPAT Fundamentals
Prefix and Course Number: FLPT 104

Course Learning Outcomes:
By the end of this course, a student should be able to:

- Learn to identify basic characteristics of hydraulic and pneumatic systems.
- Understand hydraulic and pneumatic actuators.
- Learn and identify hydraulic and pneumatic directional control valves
- Learn and identify hydraulic pressure controls
- Learn to identify and apply pneumatic air prep
- Learn, identify and understand basic hydraulic pumps

Course Outline

I. Hydraulic/Pneumatic differences
   A. Basic Characteristics
   B. Basic hydraulic and pneumatic symbols
   C. Series circuit
   D. Parallel circuit

II. Hydraulic and Pneumatic Actuators
   A. Sizing pneumatic actuators
   B. Sizing hydraulic actuators
   C. Schematic symbols of actuators
   D. Rotary actuators, hydraulic and pneumatic
   E. Motors, hydraulic and pneumatic
   F. Linear actuators, hydraulic and pneumatic

III. Hydraulic and Pneumatic Directional Control Valves
   A. Sizing pneumatic directional control valves
   B. Sizing hydraulic directional control valves
   C. Directional valve schematic symbols
   D. Mounting styles
   E. Operators of a pneumatic directional valve
   F. Operators of a hydraulic directional valve

IV. Hydraulic Pressure Controls
   A. Identify schematic symbols of 5 hydraulic pressure controls
      1. Simple relief
      2. Counterbalance valve
      3. PSI reducing
      4. PSI sequence
      5. Unloading relief
   B. Apply and set pressure control for application

V. Hydraulic Pressure Controls
   A. Identification of schematic symbols of 5 hydraulic pressure controls
      1. Simple relief
      2. Counterbalance valve
      3. PSI reducing
4. PSI sequencing
5. Unloading relief
   B. Apply and set pressure control for application

VI. Pneumatic Air Prep – Identify and apply
   A. Pneumatic regulators
   B. Pneumatic lubricators
   C. Pneumatic filters

VII. Hydraulic Pumps
   A. Basic Pump construction
   B. Identifying pump construction
      1. Gear
      2. Vane
      3. Piston
   C. Size and application
   D. Pump symbols