

Bossier Parish Community College
Master Syllabus

Course Prefix and Number: OGPT 153

Credits: 3-2-2

Course Title: Hydraulic/Pneumatic Applications for the Oil and Gas Industry with Lab

Course Prerequisite: None

Textbook: Patrick J. Klette, Fluid Power Systems. (2nd Edition), ISBN: 978-0-8269-3634-9.

Course Description: Major topics include pressure units applicable to hydraulics systems, Pascal's Law, transmission of energy in hydraulic systems, mechanical advantage, flow measurement, pumps, motors, accumulators, cylinders, pipe networks, open channels, dams, reservoirs and flow measurement devices. Students will learn to calculate properties of fluids such as velocity, pressure, density and temperature, and calculating and evaluating the characteristics of the flowing and static fluids in various tubular and annular systems.

Learning Outcomes:

At the end of the course, the student will:

- A. demonstrate familiarization with symbols and terminology used to design, develop, and analyze hydraulic systems and pneumatic systems as applied to the upstream energy industry;
- B. measure force transmitted through hydraulic systems and pneumatic systems; described Hydraulic Principles commonly practiced;
- C. determine fluid and pneumatic characteristics and applications utilized within the energy industry.

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

- 1. describe how fluid power is used in modern hydraulic and pneumatic applications; (A)
- 2. identify the different states and forms of energy and explain how work, exerted force, ft pounds, power and horsepower relate to fluid power. Define Pascals Law. (A)
- 3. describe the basic characteristics of hydraulic fluid in a system, and the relationship between resistance and pressure in a system. (B)
- 4. identify the different conductors used in hydraulic systems and the types of pipes, tubing, and hoses used in fluid power systems. (A)
- 5. describe the basic steps for creating fluid flow that are common to all hydraulic pumps and the specific actions that the different types of hydraulic pumps use to create fluid flow and pressure. (B)
- 6. identify the different types of check valves, directional control valves and their associated actuators and logic valves. (A)
- 7. describe the difference between a fixed and variable orifice and its application with flow control valves, affected fluid flow, meters and bleed off systems. (A)

8. identify the different types of hydraulic cylinders, types of seals, mounting methods and the various hydraulic motors and their applications. (B)
9. define the basic physical properties of gas, temperature behavior related to gas laws, and the advantages and disadvantages of using pneumatic compression and control systems. (A)
10. describe the different types and effects of contaminants in a pneumatic system, and prevention techniques and methods. (B)
11. define terminology and measurement used in hydraulic/pneumatic systems; (B)

Course Requirements: Complete all homework assignments, lecture tests, lab assignments and final exam. Textbook, computer access and scientific calculator are required.

Course Grading Scale:

90% to 100%	=	A
80% to < 90%	=	B
70% to < 80%	=	C
60% to < 70%	=	D
< 60%	=	F

Attendance Policy: The college attendance policy is available at <http://www.bpcc.edu/catalog/current/academicpolicies.html>

Course Fees: None

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