A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: 4
Lab Hours/Week: *.*
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None
MnTC Goals: None

This course provides learners with an understanding of the knowledge for the operation, function, and application of common hydraulic components. The course concentrates on the various pressure controls, flow controls, and directional control valves plus pumps and actuators with an overall emphasis on energy efficiencies. Prerequisite: none.

B. COURSE EFFECTIVE DATES: 08/22/2011 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Apply Pascal’s Law to simple circuits.
2. Apply common flow principles.
3. Recognize common fluid conductors, connectors, and fluids.
4. Explain the function of various pressure control valves.
5. Identify the pressure control valve and schematic symbol for the application.
6. Describe meter-in, meter-out, or bleed-off applications.
7. Describe flow principles of flow control valves.
8. Recognize various types of various cartridge valves and industrial directional control valves.
9. Recognize two-stage directional control valves.
10. Explain the difference between open center, closed center, and load-sensing circuits.
11. Recognize how mobile directional control valves differ.
12. Explain the operating principles of various pumps, the various displacement controls, and their affect on efficiencies.

D. LEARNING OUTCOMES (General)

1. The learner will gain an understanding of common pressure control components. This will begin with the basic knowledge of hydraulics and the concepts behind simple circuits. The learner will be able to identify pressure controls for various applications.
2. The learner will gain an understanding of common flow control components. The learner will gain the knowledge on how flow controls differ from pressure controls, the different types of flow controls, and how the various non-compensated and pressure compensated flow controls differ in application.
3. The learner will gain an understanding of common directional control components. The learner will recognize the basic actions of both the industrial and mobile directional valve market. The learner will also be able to explain the various operating principles and their efficiencies.
4. The learner will gain an understanding of common pump and actuator components.
E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted