

# Dakota County Technical College

## HCEM 2135: Hydraulics I

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 1

Lab Hours/Week: 2

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This introduction to basic hydraulics is a prerequisite to related courses. The student will study principles of hydraulics, identification of components, operation, fluids, and preventive maintenance. Students will use test instruments such as high-pressure gauges and flow meters to troubleshoot and diagnose hydraulic pump efficiency and condition of related system components. System components are disassembled and reassembled, with adjustments made to main and circuit reliefs in accordance with manufacturer's specifications. Prerequisites: HCEM1101 and HCEM1130 or instructor's approval

**B. COURSE EFFECTIVE DATES:** 03/21/1998 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

### D. LEARNING OUTCOMES (General)

1. assemble vane pump
2. explain basic hydraulic system
3. test gear pump output
4. explain hydraulic motor operation
5. explain double acting hydraulic cylinder operation
6. explain single acting hydraulic cylinder operation
7. explain electro-hydraulic operation
8. explain pilot operated operation
9. explain accumulator operation
10. assemble hydraulic gear pump
11. explain directional control valve operation
12. explain radial piston pump operation
13. explain gear type and vane type pump operation
14. analyze hydraulic pump efficiency
15. analyze vane pump condition
16. analyze hydraulic gear pump condition
17. explain hydraulic preventative maintenance procedures
18. identify hydraulic fluids
19. identify hydraulic reservoirs

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted