

# Dakota County Technical College

## HCEM 2115: Transmissions

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 1

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This is a technical course designed to promote understanding of powershift transmissions used in heavy equipment industry. Theory related to powershift transmissions and torque converters, along with basic fundamental principles of hydraulics, torque multiplication, gear ratios, disassembly, assembly, and adjustment procedures are covered. Prerequisites: HCEM1101 and HCEM1130 or instructor's approval

**B. COURSE EFFECTIVE DATES:** 03/22/1998 - Present

**C. OUTLINE OF MAJOR CONTENT AREAS**

#### **D. LEARNING OUTCOMES (General)**

1. display shop safety
2. explain gear ratios
3. explain standard type transmissions
4. explain bearing types
5. identify gear types
6. explain powershift transmission operation
7. identify types of transmission fluids
8. explain clutch packs
9. describe fluid flows
10. explain operation of control valve
11. explain planetary gearing
12. explain operation of speed clutch
13. explain operation of directional clutch
14. disassemble torque converter
15. identify torque converter components
16. inspect torque converter parts
17. assemble torque converter
18. develop rebuild parts list
19. explain fluid flow through torque converter
20. analyze operation of torque converter
21. disassemble powershift planetary transmission
22. explain planetary transmission power flows
23. inspect planetary transmission parts
24. assemble planetary powershift transmission
25. perform planetary transmission clutch air test
26. test and adjust powertrain pressures
27. troubleshoot an electronic transmission
28. calibrate an electric transmission
29. perform stall test
30. test lube pressures
31. test main pressure
32. test converter pressures
33. use specialized tooling

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

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted