

# Dakota County Technical College

## **AUTM 2215: Automatic Transmission/Transaxle Theory and Operation**

### **A. COURSE DESCRIPTION**

Credits: 4

Lecture Hours/Week: 1

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course includes basic theory of torque converters, planetary gears, clutches, bands, and hydraulics. The class stresses how automatic transmissions and transaxles work and how to repair them.

**B. COURSE EFFECTIVE DATES:** 06/01/2010 - Present

**C. OUTLINE OF MAJOR CONTENT AREAS**

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

1. Inspect and replace external seals and gaskets
2. Inspect, adjust or replace (as applicable) vacuum modulator; inspect and repair or replace lines and hoses
3. Inspect, adjust or replace throttle (TV) linkages or cables; manual shift linkages or cables; transmission range sensor; check gear select indicator (as applicable)
4. Inspect, repair, and replace governor assembly
5. Service transmission; perform visual inspection; replace fluids and filters
6. Inspect and replace speedometer drive gear, driven gear, vehicle speed sensor (VSS), and retainers
7. Inspect extension housing, bushings, and seals; perform necessary action
8. Inspect, replace, and align powertrain mounts
9. Removal, disassembly, and reinstallation
10. Remove and reinstall transmission and torque converter (rear-wheel drive)
11. Air test the operation of clutch and servo assemblies
12. Assemble transmission/transaxle
13. Disassemble, clean, and inspect transmission/transaxle
14. Friction and reaction units
15. Gear train, shafts, bushings, and case
16. Inspect accumulator bore, piston, seals, spring, and retainer; determine necessary action
17. Inspect and measure planetary gear assembly (includes sun gear, ring gear, thrust washers, planetary gears, and carrier assembly); determine necessary action
18. Inspect and reinstall parking pawl, shaft, spring, and retainer; determine necessary action
19. Inspect bands and drums; determine necessary action
20. Inspect bushings; determine necessary action
21. Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action
22. Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; determine necessary action
23. Inspect converter flex plate, attaching parts, pilot, pump drive, and seal areas
24. Inspect oil delivery seal rings, ring grooves, and sealing surface areas
25. Inspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; determine necessary action
26. Inspect servo bore, piston, seals, pin, spring, and retainers; determine necessary action
27. Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action
28. Inspect, leak test, and flush cooler, lines, and fittings
29. Inspect, measure, and replace oil pump assembly and components
30. Inspect, measure, and replace thrust washers and bearings
31. Inspect, measure, clean, and replace valve body (includes surfaces, bores, springs, valves, sleeves, retainers, brackets, check-balls, screens, spacers, and gaskets)
32. Inspect, measure, repair, adjust or replace transaxle final drive components
33. Measure clutch pack clearance; determine necessary action
34. Measure endplay or preload; determine necessary action
35. Measure torque converter endplay and check for interference; check stator clutch
36. Oil pump and converter
37. Remove and reinstall transaxle and torque converter assembly

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

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted