

# Dakota County Technical College

## AUTM 2205: Advanced Driveline and Chassis Systems

### A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: 1

Lab Hours/Week: 4

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course includes the advanced diagnosis and electrical repairs of the driveline components. Emphasis will be placed on anti-lock brakes and traction control. Prerequisite: Successful completion of AUTM2011 Suspension, Steering and Alignment, AUTM2025 Brakes, AUTM2032 Manual Trans-Transaxle, Clutches, transfer Cases and Differentials with a minimum overall score of 70% OR concurrent enrollment in course 2960 Skill Development with instructor approval.

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

**C. OUTLINE OF MAJOR CONTENT AREAS**

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

1. Bleed the anti-lock brake systems (ABS) front and rear hydraulic circuits
2. Check for module communication (LAN/CAN/BUS) errors using a scan tool
3. Depressurize high-pressure components of the anti-lock brake system (ABS)
4. Diagnose anti-lock brake system (ABS) electronic control(s) and components using self-diagnosis and/or recommended test equipment: determine necessary action
5. Diagnose body electronic system circuits using a scan tool: determine necessary action
6. Diagnose electrical/electronic integrity for series, parallel, and series-parallel circuits using principles of electricity (OHM's law)
7. Diagnose incorrect operation of motor-driven accessory circuits: determine necessary action
8. Diagnose poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise concerns caused by the anti-lock brake system (ABS); determine necessary action
9. Diagnose supplemental restraint system (SRS) concerns: determine necessary action (note: follow manufacturer's safety procedures to prevent accidental deployment)
10. Disarm and enable the air bag system for vehicle service
11. Identify and inspect anti-lock brake system (A) components: determine necessary action
12. Identify and interpret electrical/electronic system concern: determine necessary action
13. Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals)
14. Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins
15. Use wiring diagrams during diagnosis of electrical circuit problems
16. Diagnose 4x4 light problems
17. Diagnose air bag light
18. Diagnose anti-lock brake system (ABS) braking concerns caused by vehicle modifications (tire size, curb height, final drive ratio, etc.)
19. Diagnose electronic shift problem
20. Diagnose traction control light
21. Explain 4x4 failures
22. Explain electrical malfunction
23. Explain electrical problem
24. Explain electrical repairs
25. Identify SIR components
26. Identify electronic shift differential components
27. Identify electronic suspension components
28. Identify traction control components
29. Identify traction control/vehicle stability control system components
30. Identify transfer case electronic components
31. Make necessary electrical repairs
32. Remove and install anti-lock brake system (ABS electrical/electronic and hydraulic components)
33. Research electrical repairs
34. Research electrical schematics
35. Research electrical wiring schematics
36. Research electrical wiring schematics
37. Road test vehicle for proper operation
38. Road test vehicle to verify repair

39. Test, diagnose, and service ABS speed sensors, toothed ring (tone wheel), and circuits using a graphing voltmeter (GMM), digital storage oscilloscope (DSO) (includes output signal, resistance, shorts to voltage/ground, and frequency data)
40. Verify electronic suspension complaint
41. Verify problem has been repaired
42. Verify traction control problem has been corrected

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

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted