

HIBBING COMMUNITY COLLEGE COURSE OUTLINE

COURSE NUMBER & TITLE: ASES 1022: Four Wheel/All-Wheel Drive

CREDITS: 1 (0 Lec/ 1 Lab)

PREREQUISITES: Instructor approval.

CATALOG DESCRIPTION:

Four Wheel/All-Wheel Drive explains operation, diagnosis and repair of components used in four wheel drive/all-wheel drive systems. Topics include transfer cases, power transfer units, and axle disconnects.

OUTLINE OF MAJOR CONTENT AREAS:

- I. Safety precautions
- II. 4WD/AWD systems and applications
- III. Transfer case
 - A. Conventional- light truck
 - B. Power transfer units
 - C. Viscous clutches
- IV. 4WD hub assemblies
 - A. Manual locking
 - B. Automatic locking
 - C. Axle disconnects
- V. System operation
- VI. Repair and replacement

COURSE GOALS/OBJECTIVES/OUTCOMES:

Students will

- 1. explain driveline safety procedures.
- 2. perform shop safety procedures.
- 3. apply proper resources, manuals, and handouts.
- 4. identify types of systems.
- 5. interpret terminology used.
- 6. explain system powerflow.
- 7. explain transfer case operation.
- 8. explain power transfer unit operation.
- 9. explain viscous coupling operation.
- 10. service transfer case.
- 11. identify transfer case maintenance.
- 12. identify transfer case controls.
- 13. diagnose noise and vibration.
- 14. diagnose and service wheel bearings on 4WD systems.
- 15. diagnose and service manual locking hubs.

16. diagnose and service automatic locking hubs.
17. diagnose and service axle disconnect assemblies.
18. diagnose and service universal joints.
19. diagnose and service double carden joints.
20. identify part time systems.
21. identify full time systems.
22. identify electronically controlled transfer case.
23. define axle wind-up.
24. disassemble, service and reassemble transfer case and component.
25. identify & discuss concerns related to variations in tire circumference & final drive ratio.

The instructor may deviate from the above list to meet industry changes and time or space availability.

MNTC GOALS AND CEMPETENCIES MET:

N/A

HCC COMPETENCIES MET:

Working Productively & Cooperatively
 Communicating Clearly & Effectively
 Thinking Creatively & Critically

STUDENT CONTRIBUTIONS:

Students will be expected to

1. attend all class sessions.
2. participate in class activities and discussions.
3. request assistance when needed .
4. complete and hand in assigned work when due.

Attendance is critical. If the student is not present they cannot participate in or, contribute to the learning process.

STUDENT ASSESSMENT SHALL TAKE PLACE USING INSTRUMENTS SELECTED/DEVELOPED BY THE COURSE INSTRUCTOR.

SPECIAL INFORMATION: (SPECIAL FEES, DIRECTIVES ON HAZARDOUS MATERIALS, ETC.)

AASC APPROVAL DATE: December 18, 2013
REVIEW DATE: December 2018

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