MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

DEPT. AUTO          COURSE NUMBER: 2113

NUMBER OF CREDITS: 3          Lecture: 1 Lab: 2 OJT 0

Course Title: Manual Drivetrain and Axles

Catalog Description: Manual Drivetrain and Axles describes the fundamentals of conventional and light truck manual transmission and clutches. Contents will include power flow, design, adjustment, overhaul procedures, diagnosis, and repairs.

Prerequisites or Necessary Entry Skills/Knowledge:
None

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Goal 1: Communication: _____ by meeting the following competencies:
Goal 2: Critical Thinking: _____ by meeting the following competencies:
Goal 3: Natural Sciences: _____ by meeting the following competencies:
Goal 4: Mathematics/Logical Reasoning: _____ by meeting the following competencies:
Goal 5: History and the Social and Behavioral Sciences: _____ by meeting the following competencies:
Goal 6: The Humanities and Fine Arts: _____ by meeting the following competencies:
Goal 7: Human Diversity: _____ by meeting the following competencies:
Goal 8: Global Perspective: _____ by meeting the following competencies:
Goal 9: Ethical and Civic Responsibility: _____ by meeting the following competencies:
Goal 10: People and the Environment: _____ by meeting the following competencies:

Topics to be Covered
Manual transmission and clutch fundamentals
Manual transmission systems
Clutch systems
## Student Learning Outcomes

<table>
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<tr>
<th>Activity</th>
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<tr>
<td>Identify and interpret drive train concerns; determine needed action</td>
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<td>Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; determine needed action.</td>
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<td>Inspect flywheel and ring gear for wear and cracks; determine needed action.</td>
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<td>Inspect and/or replace clutch pressure plate assembly, clutch disc, release bearing, linkage, and pilot bearing/bushing.</td>
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<td>Inspect, adjust, lubricate, and/or replace shift linkages, brackets, bushings, cables, pivots, and levers.</td>
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<td>Diagnose and repair drive shaft and half shaft, universal and constant-velocity (CV) joint. (Front, Rear, All-wheel, Four-wheel drive)</td>
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<td>Diagnosis and Repair drive axels</td>
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<td>Diagnose and repair four-wheel drive/all-wheel drive components</td>
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<td>Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations</td>
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*The required outcomes follow the Auto Service Technician (AST) model of the National Automotive Technical Education Foundation (NATEF) certification program.*

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**Is this course part of a transfer pathway:** Yes ☐  No ☒

Revised Date: 6/2021