Alexandria Technical and Community College

DIES 2640: Powertrains II

A. COURSE DESCRIPTION

Credits: 6
Lecture Hours/Week: 3
Lab Hours/Week: 6
OJT Hours/Week: *

Prerequisites:
This course requires both of these prerequisites
  DIES 1636 - Power Trains I (Number of Years Valid: 5)
  DIES 1651 - Diesel Servicing/PM (Number of Years Valid: 5)

Corequisites: None
MnTC Goals: None

This course covers the heavy-duty powertrain of on and off road equipment. Components include clutches, torque converters, torque dividers, planetary and countershaft transmissions, driveline, axles, power dividers, differentials, final drives, and the undercarriage. Students will study the operation, service procedures, and troubleshooting techniques necessary to maintain and repair these components.

B. COURSE EFFECTIVE DATES: 08/25/2014 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Display knowledge of powertrain components.
2. Demonstrate ability to keep work area safe.
3. Display ability to use special tooling.
4. Demonstrate ability to disassemble/reassemble twin countershaft transmissions.
5. Demonstrate ability to test/adjust on-road powertrain components.
6. Demonstrate ability to service and maintain on-road powertrain components.
7. Utilize service literature for repair and maintenance practices.
8. Display knowledge of off-road powertrain components.
9. Display ability to use special tooling.
10. Demonstrate ability to disassemble/reassemble planetary transmissions.
11. Demonstrate ability to test and adjust off-road powertrain components.
12. Demonstrate ability to service and maintain off-road powertrain components
13. Interpret service literature directions and procedures.

D. LEARNING OUTCOMES (General)

1. The learner will display an understanding of powertrain components.
2. The learner will show understanding of drive axle design and proper adjustment procedures.
3. The learner will demonstrate understanding of drive axle repair procedures.
4. The learner will show understanding of final drives and undercarriage.
5. The learner will show understanding of clutches and torque converters.
6. The learner will show understanding of driveline construction and repair.

7. The learner will show understanding of transmission design and demonstrate proper disassembly/reassembly.

8. The learner will demonstrate the ability to remove and install transmissions according to manufacturer's specifications.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted