DIES 2632: Electronic Engines/Controls

A. COURSE DESCRIPTION

Credits: 3  
Lecture Hours/Week: 2  
Lab Hours/Week: 2  
OJT Hours/Week: *,*

Prerequisites:
This course requires the following prerequisite
   DIES 1633 - Diesel Electronic Systems (Number of Years Valid: 5)

Corequisites: None  
MnTC Goals: None

Students study theory of diesel electronics and their applications. This course concentrates on Caterpillar, Cummins, and Detroit Diesel electronic engine designs. Laptops and test equipment are included.

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. Demonstrate proper shop and personal safety procedures.  
2. Discuss the role of diesel emission control.  
5. Interpret basic electronic diesel engine terminology.  
6. Demonstrate use of electronic diesel engine service tools.  
7. Demonstrate electrical wiring, connector, and terminal repair.  
8. Define the role of multiplexing.  
9. Identify and adjust fuel system components on an electronic unit injector-fueled engine.  
10. Demonstrate the testing procedures required to measure, test, and repair a common rail fuel system.  
11. Identify the main components of a Caterpillar HEUI fuel system.  
12. Identify the main components of a Cummins electronic engine fuel system.

D. LEARNING OUTCOMES (General)

1. The learner will demonstrate proper shop and safety procedures.  
2. The learner will demonstrate knowledge of current diesel engine vehicle computing systems.  
3. The learner will demonstrate knowledge of industry wiring schematics, correct wiring harness repair procedures and fundamentals of electricity/electronics.  
4. The learner will demonstrate usage of current industry ECM communication devices.  
5. The learner will demonstrate knowledge of current electronic diesel engine fuel systems.  
6. The learner will demonstrate knowledge of current emission reduction devices.  
7. The learner will demonstrate knowledge of intake and exhaust system principles.
8. The learner will demonstrate knowledge of electronic diesel engine troubleshooting procedures.

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted