Course Information

Organization: Eastern Arizona College  
Division: Industrial Technology Education  
Course Number: AUT 102  
Title: Diesel Service Techniques  
Credits: 2  
Developed by: Brian Coppola  
Lecture/Lab Ratio: 1 Lecture/3 Lab  
Transfer Status: Non-transferable  
Activity Course: No  
CIP Code: 47.0605  
Assessment Mode: Pre/Post Test (25 Questions/100 Points)  
Semester Taught: Fall  
GE Category: None  
Separate Lab: No  
Awareness Course: No  
Intensive Writing Course: No

Prerequisites

None

Educational Value

This course is designed to reinforce and apply information, processes, and ideas gained in other courses. The major intent of this course is to enhance the individual's abilities to basic scheduled service on diesel equipment.

Description

Provides an overview of basic diesel equipment systems. This course provides safety and basic operational knowledge, care, and maintenance inspection of engine, fuel, suspension, brakes, electrical, and drive train systems. Also includes information related to a diesel shop organization structure, product line information, and use of Caterpillar's service and repair information system.
**Textbooks**


**Supplies**

Safety glasses, steel toe shoes, and work (cotton) clothing - required

**Competencies and Performance Standards**

1. **Apply proper safety procedures and processes.**
   
   **Learning objectives**
   
   *What you will learn as you master the competency:*
   
   a. Acquaint self with shop environment and hazards.
   
   b. Acquaint self with emergency procedures and policy.
   
   c. Accept responsibility for personal well-being and practice and follow safety guidelines.
   
   d. Acquaint self with material safety data sheets and chemical used in shop.
   
   **Performance Standards**
   
   *Competence will be demonstrated:*
   
   o when learner completes safety assignments and written exam at a satisfactory level.
   
   *Criteria - Performance will be satisfactory when:*
   
   o learner observes and practices safety procedures.

2. **Perform manufacturer's recommended preventative maintenance and equipment lubrication inspection service procedures.**

   **Learning objectives**
   
   *What you will learn as you master the competency:*
   
   a. Demonstrate the ability to change oil, lube chassis, inspect safety systems, and inspect fluid, undercarriage, tires (or tracks) & belts.
   
   b. Demonstrate the ability to identify needed scheduled service time frames for various equipment.
   
   c. Demonstrate the ability to replace filters, identify needed repairs to under hood & body equipment components.
   
   d. Perform oil sample procedure and interpret oil sample results.

   **Performance Standards**

   *Competence will be demonstrated:*

   o When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
   
   o When the learner performs the priority tasks listed in the related learning plan. (The
tasks must be completed with limited supervision - entry level).

Criteria - Performance will be satisfactory when:

- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.
- learner actively participates in the task requirements listed in the related learning plan.
- learner attends required class and lab sessions and shows up on time.

3. Perform recommended drive belt and cooling systems service.

Learning objectives
What you will learn as you master the competency:

a. Demonstrate the ability to replace vehicle drive belts.

b. Demonstrate the ability to test mixture percent & condition, flush and replace engine cooling system components.

Performance Standards
Competence will be demonstrated:

- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
- When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

Criteria - Performance will be satisfactory when:

- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.
- learner actively participates in the task requirements listed in the related learning plan.
- learner attends required class and lab sessions and shows up on time.

4. Perform safety and lighting systems inspection.

Learning objectives
What you will learn as you master the competency:

a. Demonstrate the ability to identify safety problems with lighting systems, body systems and various safety warning devices.

Performance Standards
Competence will be demonstrated:

- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
o When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

Criteria - Performance will be satisfactory when:

o learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.

o learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.

o learner actively participates in the task requirements listed in the related learning plan.

o learner attends required class and lab sessions and shows up on time.

5. Perform basic electrical system inspection and component replacement.

Learning objectives

What you will learn as you master the competency:

a. Demonstrate the ability to test for voltage and battery's state of charge.

b. Demonstrate the ability to identify and replace electrical circuit protection devices.

c. Demonstrate the ability to identify component locations and repair lighting systems components.

Performance Standards

Competence will be demonstrated:

o When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).

o When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

Criteria - Performance will be satisfactory when:

o learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.

o learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.

o learner actively participates in the task requirements listed in the related learning plan.

o learner attends required class and lab sessions and shows up on time.

6. Perform basic fuel system service.

Learning objectives

What you will learn as you master the competency:

a. Demonstrate an ability to inspect glow plug system components.

b. Demonstrate an ability to test fuel delivery system.

c. Demonstrate an ability to replace fuel system components

Performance Standards
Competence will be demonstrated:

- When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).
- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).

Criteria - Performance will be satisfactory when:

- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.
- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner attends required class and lab sessions and shows up on time.

7. Perform brake, suspension and steering systems safety inspection.

Learning objectives

What you will learn as you master the competency:

a. Demonstrate the ability to inspect and repair drum brake components.

b. Demonstrate the ability to inspect and repair disc brake components.

c. Identify worn out suspension components.

d. Identify worn steering systems components.

Performance Standards

Competence will be demonstrated:

- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
- When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

Criteria - Performance will be satisfactory when:

- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner actively participates in the task requirements listed in the related learning plan.
- learner attends required class and lab sessions and shows up on time.

8. Perform transmission and transaxle adjustments and preventative maintenance service.

Learning objectives

What you will learn as you master the competency:
a. Demonstrate the ability to service transmission's filter and inspect fluid (take fluid test sample).

**Performance Standards**

*Competence will be demonstrated:*

- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
- When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

**Criteria - Performance will be satisfactory when:**

- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.
- learner actively participates in the task requirements listed in the related learning plan.
- learner attends required class and lab sessions and shows up on time.

9. Acquaint self with Caterpillar's service and repair information system

**Learning objectives**

*What you will learn as you master the competency:*

a. Demonstrate the ability to utilize Caterpillar's service and repair information systems by locating various repair information.

**Performance Standards**

*You will demonstrate your competence:*

- When learner completes aligned assignment and job sheets listed in the related learning plan. (The assignment and job sheets must be completed at a satisfactory level to the instructor).
- When the learner performs the priority tasks listed in the related learning plan. (The tasks must be completed with limited supervision - entry level).

*Your performance will be successful when:*

- learner is productive, works safely, and in a professional manner while working on task requirements listed in related learning plan.
- learner attends required class and lab sessions and shows up on time.
- learner actively participates in the task requirements listed in the related learning plan.
- learner provides acceptable oral and/or written responses to questions and/or situations asked by the instructor, while working on the task requirement listed in related learning plan.

**Types of Instruction**

Classroom Presentation

Lab
Simulated or Actual Work Experience

**Grading Information**

**Grading Rationale**

Grading Weights

- Lab = 45%
- Class (Includes Test and Assignments) = 45%
- Final Exam (Post Test is the Final) = 10%

Grading Methods

Class score calculation-
- Quizzes, assignments and job sheet points shall be added and carry a weight equal to one test score.
- All exams except the final shall have equal weight (test scores averaged) and used in class score calculations.
- The final (post test) will be worth at least 10% of the overall final grade calculation.

Lab score calculation-
- Instructor should evaluate each student's work habits using lab time card.
- Each student should be evaluated on productivity and progress on task requirements, working in a professional manner, clean-up and safe work habits. Instructor is also required to evaluate each student's skill level in achieving the task requirement outlined in the various learning plans.

Instructors are encouraged to reward students for showing up on time and attending each class and lab session. This can be done by requiring students to make arrangements with the instructor to make-up any lost time prior to missed day. All students need to notify the instructor of sick days through voice mail, etc. on the day of sickness. Instructors should not allow for any work to be turned in late or any test made up without some type of deduction for late assignments/test. Suggested deduction 50% of original score.

**Grading Scale**

- A 90-100%
- B 80-89.9%
- C 70-79.9%
- D 60-69.9%
- F 0-59.9%
Pass/Fail  A non-major student may choose to have a grade of P or F rather than a letter grade. A grade of P will require that the student receive a percentage grade of at least 68%. A grade less than this will result in a grade of F.