



Western Technical College

32412415 Diesel Heavy Equipment Inspection and Preventive Maintenance

Course Outcome Summary

Course Information

Description	This course is a practical study of performing preventive maintenance inspections on off road equipment. Students will learn what defects to inspect for and how to follow a preventive maintenance schedule to prevent costly repairs and unsafe conditions.
Career Cluster	Transportation, Distribution and Logistics
Instructional Level	Technical Diploma Courses
Total Credits	3
Total Hours	108

Pre/Corequisites

Prerequisite	32412400 Diesel Truck Preventive Maintenance
Prerequisite	32412401 Diesel Truck Powertrains
Prerequisite	32412351 Diesel Truck Brake Systems
Prerequisite	32412402 Diesel Truck Chassis Systems
Prerequisite	32412403 Diesel Online Service Utilization
Prerequisite	32412404 Diesel Safety and Industry Practices
Prerequisite	32412405 Diesel Heavy Truck and Forklift Familiarization
Prerequisite	32412406 Diesel Electricity Fundamentals
Prerequisite	32412407 Diesel Electricity Troubleshooting
Prerequisite	32412303 Diesel Basic Engines

Textbooks

Hydraulic Systems for Mobile Equipment. 2nd Edition. Copyright 2023. Dell, Timothy W. Publisher: Goodheart-Wilcox Co. **ISBN-13:** 978-1-63776-126-7. Required.

Heavy Equipment Power Trains and Systems. 2nd Edition. Copyright 2024. Dell, Timothy W. Publisher: Goodheart-Wilcox Co. **ISBN-13:** 978-1-68584-445-5. Required.

Learner Supplies

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** To be discussed in class. Required.

Six inch ankle high, quality leather work shoes - \$75.00-100.00. **Vendor:** To be discussed in class. Required.

Uniform: Four black/grey shirts with embroidered name. **Vendor:** Campus Shop. Required.

Success Abilities

1. Refine Professionalism: Act Ethically
2. Refine Professionalism: Improve Critical Thinking
3. Refine Professionalism: Participate Collaboratively
4. Refine Professionalism: Practice Effective Communication

High Impact Practices

1. Learning Community: these courses are designed to enhance your learning experience in which a cohort of peers complete two or more courses that are linked through projects, themes, or program emphasis.

Program Outcomes

1. Diagnose, repair and service steering & suspension systems
2. Diagnose, repair and service drive train systems
3. Diagnose, repair and service hydraulic systems

Course Competencies

1. **Examine heavy equipment shop operation.**

Assessment Strategies

- 1.1. Written product
- 1.2. Skill demonstration

Criteria

You will know you are successful when:

- 1.1. you identify and correctly name the various types of lifting equipment.
- 1.2. you demonstrates the proper inspection, care, maintenance, and storage for each.
- 1.3. you demonstrates the proper use of the designed application and safe operating procedure for each

- 1.4. piece of lift equipment.
you describe regulations and standards for use, inspection and certification of lifting equipment.

Learning Objectives

- 1.a. Identify overhead crane controls and functions.
- 1.b. Demonstrate safe operation of overhead crane.
- 1.c. Describe function, use, applicability and lift options for overhead crane.
- 1.d. Demonstrate safe lifting and rigging of overhead crane.
- 1.e. Demonstrate safety inspection prior, during and after use of overhead crane.
- 1.f. Identify general safety procedures related to heavy equipment shop operation.

2. Identify controls and components of heavy equipment; including function of all controls and components.

Assessment Strategies

- 2.1. Skill demonstration

Criteria

You will know you are successful when:

- 2.1. you name all the components of select pieces of heavy equipment.
- 2.2. you name all of the controls and switches on select pieces of heavy equipment.
- 2.3. you describe the function of all controls and switches.
- 2.4. you describe the purpose of all gauges and lights.

Learning Objectives

- 2.a. Examine the components of select pieces of heavy equipment.
- 2.b. Explore the controls and switches on select pieces of heavy equipment.
- 2.c. Identify the function of all controls and switches.
- 2.d. Identify the purpose of all gauges and lights.

3. Perform safety and maintenance checks on select pieces of heavy equipment.

Assessment Strategies

- 3.1. Skill demonstration

Criteria

You will know you are successful when:

- 3.1. you wear personal protective equipment
- 3.2. you follow safety procedures
- 3.3. you select the correct tools, equipment, instruments, materials and supplies
- 3.4. you perform critical steps in the right order from start to finish
- 3.5. you are able to verbalize sound reasoning for the decisions made throughout the process
- 3.6. you demonstrate proper lock out tag out procedures.
- 3.7. you use proper fall protection equipment, including tethering if needed.
- 3.8. you demonstrate safe mounting and dismounting practices on construction machinery.
- 3.9. you demonstrates the proper inspection, care, maintenance, and storage as applicable.

Learning Objectives

- 3.a. Check proper operation of all safety features (seatbelt, alarms, etc..).
- 3.b. Check all fluid levels; fill if needed.
- 3.c. Describe expected fluid levels needed for safe operation.
- 3.d. Describe documentation requirements/ log requirements if applicable.
- 3.e. Check wheel, tire and track condition.
- 3.f. Check lift mechanism (boom, bucket, tilt, etc...).

4. Drive various pieces of heavy equipment.

Assessment Strategies

- 4.1. Skill demonstration

Criteria

You will know you are successful when:

- 4.1. you follow safety procedures
- 4.2. you perform safe mount, dismount and use of operator restraints.
- 4.3. you start various pieces of heavy equipment with attention to gauges and lights.
- 4.4. you operate various controls while stationary.
- 4.5. you drive various pieces of heavy equipment forward, backward and around obstacles.

Learning Objectives

- 4.a. Illustrate safe mount, dismount and use of operator restraints.
- 4.b. Explore start up procedures for various pieces of heavy equipment with attention to gauges and lights.
- 4.c. Examine how to operate various controls.
- 4.d. Illustrate how to drive various pieces of heavy equipment forward, backward and around obstacles.

5. Examine safe operation of various pieces of heavy equipment.

Assessment Strategies

- 5.1. Written product

Criteria

You will know you are successful when:

- 5.1. you describe safety features on each piece of select pieces of heavy equipment.
- 5.2. you perform safe operator communication while using select pieces of heavy equipment.
- 5.3. you explain the proper, safe and fundamental operation of the various types of machinery.
- 5.4. you summarize safe loading and unloading principles of select pieces of heavy equipment.

Learning Objectives

- 5.a. Describe safety features on each piece of select pieces of heavy equipment.
- 5.b. Describe operator communication while using select pieces of heavy equipment.
- 5.c. Summarize safe operating practices of select pieces of heavy equipment.
- 5.d. Summarize safe loading and unloading principles of select pieces of heavy equipment.

6. Perform service/preventative maintenance inspection on various pieces of heavy equipment.

Assessment Strategies

- 6.1. Skill demonstration

Criteria

You will know you are successful when:

- 6.1. you wear personal protective equipment
- 6.2. you follow safety procedures
- 6.3. you select the correct tools, equipment, instruments, materials and supplies
- 6.4. you perform critical steps in the right order from start to finish
- 6.5. you are able to verbalize sound reasoning for the decisions made throughout the process

Learning Objectives

- 6.a. Inspect engine compartment.
- 6.b. Inspect electrical/charging system/cab.
- 6.c. Inspect hydraulic system.
- 6.d. Inspect undercarriage.
- 6.e. Inspect drivetrain.
- 6.f. Inspect brake system.
- 6.g. Inspect safety features.
- 6.h. Inspect other attachments specific to a piece of equipment.
- 6.i. Document with repair work order.