



Western Technical College

32412416 Diesel Heavy Equipment Live Repair

Course Outcome Summary

Course Information

Description	This course is designed to familiarize the student with the procedures involved in the repair of on and off highway equipment. Hands-on experiences will be gained through the repair of such equipment as loaders, crawlers, graders, backhoes, trucks and many other types of equipment used in industry. The type of equipment varies and must meet the needs of the students and program.
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. Cultivate Passion: Enhance Personal Connections
2. Cultivate Passion: Expand a Growth-Mindset
3. Cultivate Passion: Increase Self-Awareness
4. Live Responsibly: Develop Resilience
5. Live Responsibly: Embrace Sustainability
6. Live Responsibly: Foster Accountability
7. Refine Professionalism: Act Ethically
8. Refine Professionalism: Improve Critical Thinking
9. Refine Professionalism: Participate Collaboratively
10. Refine Professionalism: Practice Effective Communication

High Impact Practices

1. Capstone Experience: in this course, you will develop a project that integrates and applies many of the concepts, skills, and characteristics needed of an industry expert in the field.
2. Community Engagement - in this course, you will explore and reflect on opportunities presented by the college and the program to become more involved in the community (ex: Employer Spotlights, Volunteerism, Professional Associations, and Community Action Boards)
3. 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.
4. Work-Based Learning: this course applies your learning to your desired profession by working in industry placements such as internships, practicums, clinicals, or co-ops.

Program Outcomes

1. Diagnose, repair and service brake systems
2. Diagnose, repair and service steering & suspension systems
3. Diagnose, repair and service HVAC systems
4. Diagnose, repair and service drive train systems

Course Competencies

1. Demonstrate engine repair in a simulated environment.

Assessment Strategies

- 1.1. Written Product
- 1.2. Skill Demonstration
- 1.3. Written Objective Test

Criteria

You will know you are successful when:

- 1.1. you wear personal protective equipment.
- 1.2. you follow safety procedures.
- 1.3. you select the correct tools, equipment, instruments, materials, and supplies.
- 1.4. you perform critical steps in the right order from start to finish
- 1.5. you are able to verbalize sound reasoning for the decisions made throughout the process.
- 1.6. you attend class regularly and on time.
- 1.7. you meet criteria for successful completion of written products such as lab sheets, presentations, and case studies.

Learning Objectives

- 1.a. Practice engine diagnosis.
- 1.b. Practice cylinder head and valve train diagnosis and repair.
- 1.c. Practice engine block assembly diagnosis and repair.
- 1.d. Practice lubrication and cooling systems diagnosis and repair.

2. Demonstrate heavy duty power train repair in a simulated environment.

Assessment Strategies

- 2.1. Written Product
- 2.2. Skill Demonstration
- 2.3. Written Objective Test

Criteria

Performance will meet expectations when:

- 2.1. you wear personal protective equipment.
- 2.2. you follow safety procedures.
- 2.3. you select the correct tools, equipment, instruments, materials, and supplies.
- 2.4. you perform critical steps in the right order from start to finish.
- 2.5. you are able to verbalize sound reasoning for the decisions made throughout the process.
- 2.6. you attend class regularly and on time.
- 2.7. you meet criteria for successful completion of written products such as lab sheets, presentations, and case studies.

Learning Objectives

- 2.a. Practice powershift diagnosis and repair.
- 2.b. Practice finaldrive and axle diagnosis and repair.
- 2.c. Practice manual transmission diagnosis and repair.
- 2.d. Practice hydrostatic drive diagnosis and repair.
- 2.e. Practice torque converter diagnosis and repair.
- 2.f. Practice electronic-controlled transmission diagnosis and repair.
- 2.g. Practice clutch diagnosis and repair.
- 2.h. Practice drive shaft diagnosis and repair.

2.i. Practice brake system diagnosis and repair.

3. Demonstrate suspension and steering repair in simulated environment.

Assessment Strategies

- 3.1. Written Product
- 3.2. Skill Demonstration
- 3.3. Written Objective Test

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 attend class regularly and on time.
- 3.7. you meet criteria for successful completion of written products such as lab sheets, presentations, and case studies.

Learning Objectives

- 3.a. Practice steering systems diagnosis and repair.
- 3.b. Practice wheel, tire, and track diagnosis and repair.

4. Demonstrate electrical/electronic systems repair in simulated environment.

Assessment Strategies

- 4.1. Written Product
- 4.2. Skill Demonstration
- 4.3. Written Objective tests

Criteria

Performance will be satisfactory when:

- 4.1. you wear personal protective equipment.
- 4.2. you follow safety procedures.
- 4.3. you select the correct tools, equipment, instruments, materials, and supplies.
- 4.4. you perform critical steps in the right order from start to finish.
- 4.5. you are able to verbalize sound reasoning for the decisions made throughout the process.
- 4.6. you attend class regularly and on time.
- 4.7. you meet criteria for successful completion of written products such as lab sheets, presentations, and case studies.

Learning Objectives

- 4.a. Practice general electrical system diagnosis.
- 4.b. Practice battery diagnosis and service.
- 4.c. Practice starting system diagnosis and repair.
- 4.d. Practice charging system diagnosis and repair.
- 4.e. Practice lighting systems diagnosis and repair.
- 4.f. Practice gauge, warning devices, and driver information system diagnosis and repair.
- 4.g. Practice horn and wiper/washer diagnosis and repair.
- 4.h. Practice accessories diagnosis and repair.

5. Demonstrate repair of related systems in simulated environment.

Assessment Strategies

- 5.1. Written Product
- 5.2. Skill Demonstration
- 5.3. Written Objective Test

Criteria

You will know you are successful when:

- 5.1. you wear personal protective equipment.

- 5.2. you follow safety procedures.
- 5.3. you select the correct tools, equipment, instruments, materials, and supplies.
- 5.4. you perform critical steps in the right order from start to finish.
- 5.5. you are able to verbalize sound reasoning for the decisions made throughout the process.
- 5.6. you attend class regularly and on time.
- 5.7. you meet criteria for successful completion of written products such as lab sheets, presentations, and case studies.

Learning Objectives

- 5.a. Perform preventative maintenance procedures.
- 5.b. Practice hydraulic system diagnosis and repair.
- 5.c. Practice repair and replacement of commonly worn parts such as pins, bushings, tracks, and rollers.