

**AUT 73 - Diesel Industry Technologies Lecture****Catalog Description****Transfer Status:** CSU**Unit(s):** 3.00**Lecture:** 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)**Total:** 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This course develops the skills needed to safely diagnose, repair and maintain the systems and sub-systems specific to heavy duty and over-the-road diesel powered vehicles. Topics will include: Diagnosing problems in mechanical, electrical, pneumatic, and electronic systems with industry standard test equipment; Troubleshooting the sophisticated electronic controls that govern engine performance and horsepower as well as transmission and braking systems; Troubleshooting steering, hydraulic, pneumatic systems, brakes, axles, differentials, electric motors, and compressors. Students will learn heavy-duty industry standardized safety inspection procedures.

Objectives

Upon successful completion of this course, the student should be able to:

1. Troubleshoot and perform repairs on heavy-duty mechanical, electrical, pneumatic, hydraulic and electronic systems.
2. Use computers and industry scan tools to diagnose heavy-duty equipment and research information.
3. Perform preventative maintenance such as safety inspection, engine tune-ups, front-end alignments, and air brake adjustments on heavy-duty equipment.
4. Operate common heavy-duty shop machinery and equipment.
5. Select and use precision tools such as torque wrenches, micrometers, dial indicators, tap and dies, bore gauges, and other industry specialty tools.
6. Analyze unique faults and situations, create a diagnostic plan, and make informed professional decisions.

Course Content**Topic Titles / Suggested Time Topic****Lecture**

<u>Topics</u>	<u>Lec Hrs</u>
Diesel truck industry, safety procedures and environmental regulations	3.00
Tools, tool usage and safety; Fasteners and identification of fasteners	3.00
Fleet vehicle safety inspection procedures	3.00
Diesel engine construction and operation	5.00
Medium and heavy-duty vehicle alignment angles and alignment	5.00
Diesel refrigeration systems construction and operation	5.00
Conventional and air brake system theory, operation and repair	12.00
Diesel transmission and axle theory, operation and repair	5.00
Mobile hydraulics theory, operation and repair	10.00
Total Hours:	51.00

Methods of Instruction

- A. Class Activities
- B. Demonstrations
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Lecture
- E. Reading Assignments

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Demonstration
- D. Homework
- E. Final Examination
- F. Performance Examinations

Examples of Assignments

Reading Assignments

1. Using the textbook, read the chapter on adjusting the toe in/out of the front wheels. Be prepared to discuss the procedure in class.
2. Using electronic service publications, look up the specifications for brake shoe to drum clearance. Be prepared to discuss the procedure in class.

Writing Assignments

1. Using the supplied Repair Order (R.O.), document the repairs you made to the vehicle's refrigeration unit. Be sure to include the customers concern, cause of the failure, and the corrections performed. Follow BAR legal requirements.
2. Complete the section on hydraulics in your lecture keynote workbook. At the end, summarize what you learned in class.

Out-of-Class Assignments

1. Complete the Mechanical Safety portion of the SP2 safety test with a score of 80% or better. Prior to working in the lab, you must complete the following areas: Introduction, Fires, Slips & Falls, Power Tools, Lifts, Operating Vehicles, Jump Starting, Chemicals and the Safety Data Sheet (SDS).
2. Complete the assigned online modules found in your online textbook. Your instructor will confirm that you have completed the required modules.

Recommended Materials of Instruction

Wright, G. & Duffy, O. (2020). Fundamentals of Medium/Heavy Duty Commercial Vehicle Systems. *Jones & Bartlett, 2nd.* 9781284150933.
Wright, G. (2021). Fundamentals of Medium-Heavy Duty Diesel Engines. *Jones & Bartlett, 2nd.* 9781284150919.

Minimum Qualifications

Diesel Mechanics

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