

**Department:**

Diesel Technology

**Course Description:**

This course teaches troubleshooting disassembly, inspection, and adjustments of both hydraulic and air brake systems with the advantages and disadvantages of both systems. The course also covers the two air systems, their components, and function in the brake system.

**Course Competencies:**

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

1. Identify steering systems.
2. Diagnose steering systems.
3. Repair steering systems.
4. Identify suspension systems.
5. Diagnose suspensions systems.
6. Repair suspensions systems.
7. Diagnose total vehicle alignment.
8. Adjust total vehicle alignment.
9. Interpret wear patterns.
10. Diagnose problems of frame & coupling devices.
11. Repair frame & coupling devices.
12. Adjust frame & coupling devices.
13. Adjust manual steering gear worm bearing preload.
14. Determine center position (high point) of pitman (cross) shaft; adjust sector shaft lash.
15. Inspect steering linkages and tie rod ends.
16. Test power steering pump pressure and flow.
17. Adjust worm shaft bearing preload.
18. Adjust Pitman shaft over center preload.
19. Repair, lengthen, or shorten frame and frame members by fish (double) plating and welding in accordance with manufacturer's recommended procedures.
20. Inspect, adjust, service, repair, or replace fifth wheel, pivot pins, bushings, locking jaw mechanisms, and mounting bolts.
21. Adjust sliding fifth wheel position and locking plungers.
22. Measure knuckle pin bushing wear and steering knuckle vertical end-play.
23. Remove and replace knuckle pin bushing and seal.
24. Service V-type torque rod center joint.
25. Measure tractor ride height.
26. Inspect, test, repair or replace air spring assemblies (bags), springs, suspension arms, and bushings.
27. Perform a front wheel caster measurement.
28. Perform a front wheel toe measurement.
29. Align a rear axle.

## Course Content:

- A. Vehicle Chassis Frame
  - 1. Basic Frame Terms
  - 2. Frame Construction
  - 3. Frame Theory
  - 4. Frame Damage
  - 5. Frame Alignment
- B. Heavy-Duty Truck Trailers
  - 1. Freight Van trailers
  - 2. Refrigerated and Insulated Vans
  - 3. Other Trailer Types and Designs
  - 4. Trailer Undersides
- C. Fifth Wheels and Coupling Systems
  - 1. Types of Fifth Wheels
  - 2. Fifth Wheels Height and Location
  - 3. Principles of Fifth Wheel Operation

## Learning Assessments:

Competencies will be assessed by assignments, case problems, quizzes, chapter tests, hands-on projects, lab assignments, a midterm test, and a final test. The test can be in the objective format or in a problem-solving format.

## Instructional Materials:

Textbooks: Bennett, S. (2019). *Heavy Duty Truck Systems* (7<sup>th</sup> ed.). Cengage Learning. ISBN-13: 978-1337787109

Bennett, S. (2019). *Heavy Duty Truck Systems Student Workbook* (7<sup>th</sup> ed.). Cengage Learning. ISBN-13: 978-1337787116

### **Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition**

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

### **A Note on Harassment, Discrimination and Sexual Misconduct**

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).