

Department:

Automotive Technology

Course Description:

The brake system course is a lecture & lab course designed to provide students with an understanding of how various basic and antilock brake systems work.

Course Competencies:

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

1. Perform systemized pressure and travel calculations utilizing Pascal's Law.
2. Complete service work orders.
3. Determine appropriate system pressure tests utilizing service specifications.
4. Determine brake system concerns and necessary actions.
5. Diagnose poor stopping, pulling or dragging concerns caused by malfunctions in the hydraulic system.
6. Determine how to inspect fabricate and/or replace brake lines and hoses.
7. Determine the service specifications pertaining to the removal, cleaning and refinishing procedures on brake drums.
8. Apply drum break repair and replacement procedures.
9. Diagnose poor stopping noise vibration, pulling, grabbing, dragging, or pedal pulsation concerns on disc-brake vehicles.
10. Determine disc break repair and replacement procedures.
11. Determine how to caliper piston retractions.
12. Diagnose wheel bearing noise, wheel shimmy and vibration concerns.
13. Determine how to remove, inspect and replace bearing and hub assemblies.

Course Content:

- A. Brake System Components and Performance Standards
- B. Braking System Principles
- C. Brake Hydraulic Systems
- D. Hydraulic Valves and Switches
- E. Brake Fluid and Lines
- F. Brake Bleeding Methods and Procedure
- G. Wheel Bearings and Service
- H. Drum Brake Parts and Operation
- I. Drum Brake Diagnosis and Service
- J. Parking Brake Operation, Diagnosis, and Service
- K. Machining Brake Drums and Rotors
- L. Power Brake Unit Operation, Diagnosis, and Service
- M. ABS Components and Operation
- N. ABS Diagnosis and Service

Learning Assessments:

Assessments may include: Quizzes, tests, project work, demonstrated competence, instructor observation, weekly assignments and/or written papers.

Instructional Materials:

Textbook: Halderman, J. (2020). *Automotive Technology: Principles, Diagnosis, and Service* (6th ed.). Pearson. ISBN-13: 978-0135257272

Lab Manual: Halderman, J. (2020). *ASE Correlated Task Sheets for Automotive Technology* (6th ed.). Pearson. ISBN-13: 978-0135257418

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](#).