

Department:

Diesel Technology

Course Description:

This course teaches the history of the diesel engine from the time of invention to the present date and its differences and advantages over other types of combustion engines.

Course Competencies:

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

1. Complete statements concerning characteristics of the four-stroke cycle.
2. Identify companion cylinders.
3. Locate and record engine specifications.
4. Identify valve and piston position during each stroke.
5. Locate TDC compression for #1 piston.
6. Measure bore and stroke and compute engine displacement.

Course Content:

- A. Principles of Operation
 1. Major Engine components
 - a) Cylinder Block and Cylinder Liners
 - b) Pistons
 - c) Crankshaft
 - d) Connecting Rods
 2. Diesel Engine Classifications
 - a) Engine Cycle Design
 - b) Four-Stroke Cycle
 3. Cylinder Number and Configuration
 - a) Inline Engines
 - b) V-type Engines
 4. Combustion Chamber Designs
 - a) Direct Injection Chamber
 - b) Precombustion Chamber
 5. Diesel Fuel Injection Systems
 - a) Injection System Functions
 - b) Types of Fuel
 - c) Injection System
- B. Career Opportunities
 1. The Diesel Field
 - a) Diesel Engine and Equipment manufacturers
 - b) Diesel Technician
 2. ASE Certification
 - a) ASE Test Content
 - b) Taking ASE Tests

3. A Few Final Words
 - a) Working in the Field
- C. Introduction to Diesel Engines
 1. Diesel Versus Gasoline
 - a) Diesel Engine Stroke Cycle
 - b) Supplying Air and Fuel
 - c) Compression Ratios
 2. Diesel Engine History
 - a) Early Theories and Successes
 - b) The Silent Otto Engine
 - c) The Development of the Diesel Engine
- D. Tools, Precision Tools, and Fasteners
 1. Hand Tools
 2. Power Tools
 3. Engine Measuring Tools
 4. Specialized Diesel Tools and Equipment
 5. Electrical Test Equipment
 6. Computer System Diagnostic Tools
 7. Thread Repairs

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:

Textbook: Mack, James P., Daniels, Jason A., DeHart, Mark A., and Norman, A. (2022). *Diesel Engine Technology* (9th ed.). Tinley Park, IL: The Goodheart-Willcox Company, Inc. ISBN-13: 978-1-64564-685-3

Workbook: Mack, James P., Daniels, Jason A., DeHart, Mark A., and Norman, A. (2022). *Diesel Engine Technology* (9th ed.). Tinley Park, IL: The Goodheart-Willcox Company, Inc. ISBN-13: 978-1-64564-686-0

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](#).