



Course Syllabus

Course #: AAD 1250 Course Name: Light Diesel Engines

Division: Engineering and Industrial Technologies

Class Days: Class Time:
Location: Classroom: Laboratory:
Credit Hours: Contact Hours: Lab Hours: Lecture Hours:

Instructor: Office Location:
Phone: Email Address:

Office Hours: TBD

Division Office/Location: Engineering Building Division Fax: 419-334-2300

Full-time Contact Person: Jayne Bowersox Phone(s): (419) 559-2410

Course Description:

A study of Diesel Engines, Basic systems or Diesel Engines such as mechanical structure, cooling, lubricating, fuel, storage, troubleshooting, and service are emphasized. Students will study diagnosis and operating principles of diesel engines by use of diagrams, testing instruments, and live engines.

Prerequisite(s): None

Corequisite(s): None

Entry Level Skills and Knowledge:

Required Texts, Supplies and Equipment:

Text: Medium H.D. Truck Engine, Fuel, Computerized Management System

By: Sean Bennet

Lab Book
Safety Glasses

Grading:

10% = Attendance <Note, more than 10 minutes late (unless excused) or leaving early,(unless excused) will lower that day attendance grade by 50%>

15% = Test and Quizzes

20% = Lab Work <Lab work grade are made up of the following:

- 1. Safety as you work
2. Neatness of work & clean-up of work area
3. Usage of tools
4. Proper procedure
5. Understanding of task or work performed. Your grade for this part also drives the grade you receive for the final lab test.

Note: If you need to use the school safety glasses more than four times in this class, your lab grade will be lowered by 35%

15% = Lab task, The number of tasks that was the average for the class, all paper work must be turned in

Learning Outcomes:

General Education

1. **Communicate effectively**
2. **Evaluate arguments in a logical fashion**—Competence in analysis and logical argument are explicit learning goals for most general education programs, although these skills go by a variety of names (e.g., critical thinking, analysis, logical thinking, etc.). **Students will be able to demonstrate competence in problem solving in communication, mathematics, and in team settings.**
3. **Employ the methods of inquiry characteristic of natural sciences, social sciences, mathematics, and the arts and humanities;** general education introduces students to methods of inquiry in several fields of study and thereby prepares students to integrate information from different disciplines.

To develop a basic understanding of the terms, operation, and service of the diesel engine.

Identify the major components.

Explain the basic operation of these components

Assessment of Student Learning:

Topical Outline:

1. Introduction to class
Outline & Objectives to Class
Safety & Basic Tools
Introduction to Diesel
2. Diesel Engine Operating Principle
Diesel Engine vs. Gasoline Engine
Valve Timing
Compression Process
3. Direct & Indirect injection
2 & 4 Stroke diesels
Heads < Precombustion & Swirl >
Nozzle removal
4. Diesel Fuel
5. Basic Diesel Fuel Systems
6. Diesel Engines starting System
Basic Electricity < volts, amps, ohms >
Glow Plug systems
Block Headers
Changing Speed
7. Injection-nozzle operation
Operation
Service & Testing

8. Injection pump
 - Stanadyne & Bosch pumps
 - Transfer pump
 - Regulator
 - Electric Shutoff
 - Service of the Injection pump
 - Main components
9. In-line pumps
 - Main Components
 - Fundamental Services
10. Timing Drives, Crankshaft, valve Train
11. Basic Engine Testing, Engine Block, Piston, Crankshaft, bearings
12. Intake, exhaust and turbocharging System
- * 13. Maintenance & Diagnosis
14. Lubrication & Cooling Systems
 - * This chapter will be ongoing throughout the quarter.

Assessment Project and Measurement in course (if any):

Plan of Work:

- | | |
|--------|---|
| Week 1 | Safety, class outline, grading, testing, introduction to diesels |
| Week 2 | Lubrication and cooling systems
Diesel Engine operating principles
2 & 4 stroke, LABS |
| Week 3 | Diesel Fuel Nozzle Removal
Removal Combustion-Chamber <Precombustion chamber, swirl chamber & Hybrid
Chambers
Cylinder heads LABS |
| Week 4 | Basic Diesel fuel systems
Direct & Indirect injection injections &
Nozzle holders Injection-Nozzle operation,
testing LABS |
| Week 5 | Injection-Nozzle operation LAB |
| Week 6 | Injection Pumps LABS |
| Week 7 | Injection Pumps LABS |
| Week 8 | Engine Emission Systems
LABS |
| Week 9 | Timing Drives, camshaft, valve, train |

	Intake, exhaust, and turbocharging systems LABS
Week 10	Intake exhaust and turbocharging systems Basic Engine testing LABS
Week 11	Final Exam

Course Requirements:

Complete all assignments as required

All lab papers, or as many as time allows. Attendance at all class times from beginning to end unless other arrangements are made beforehand. Classes may consist of all lecture, all lab, or a combination of both.

Policies

Course Withdrawing: If for any reason you need to withdraw from this course, be certain that you do so according to College procedure. It is your responsibility to know and follow this procedure. If you simply stop coming to class, without officially withdrawing from the course, your grade is an automatic “F.” Please follow official College procedure for withdrawing from this or any course.

College Academic Policies are located in the College Catalog. A copy of the current catalog may be picked up in any of the division offices or admissions. The list of college policies is also available online at <https://www.terra.edu/register/Collegecat/policies.asp>.

Support Services: The College offers a number of support services to assist in your success in this course and all courses. Among these services are the Writing & Math Center in B105, the Office of Learning Support Services, which coordinates the campus disability services and tutoring programs, the computer labs, and the computers in the atriums.

Any student who feels he/she may need an accommodation based on the documentation of a disability should contact the Office of Learning Support Services privately to discuss his/her specific issues. Please contact the OLSS at (419) 334-8400 X 208 or visit 100 Roy Klay Hall (Building A) to coordinate reasonable accommodations.

If you have a documented disability and are receiving academic accommodations through the Office of Learning Support Services, please schedule a meeting with your instructor in a timely manner so that we may discuss how these services will be arranged.

Tutoring services are available to students beginning the second week of every quarter. Students requesting tutoring services should obtain a tutor request form from the OLSS in 100 Roy Klay Hall (Building A) or online at the Terra website. Please note that instructor verification and acceptance of

the Student Learner Agreement is necessary for all tutoring requests. All requests should be submitted to 100 Roy Klay Hall (Building A).