

COURSE TITLE (Diesel Engine Testing and Repair (DEMR 1410 3A2 & 5A2)

CREDIT

4 Semester Credit Hours (3 hours lecture, 4 hours lab)

MODE OF INSTRUCTION

Face to Face

PREREQUISITE/CO-REQUISITE:

DEMR 1401



COURSE DESCRIPTION

An introduction to testing and repairing diesel engines including related systems and specialized tools.

COURSE OBJECTIVES

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

1. Identify and inspect diesel engine parts.
2. Properly test and measure diesel engine parts.
3. Demonstrate proper disassemble and reassemble procedures for diesel engine components.

INSTRUCTOR CONTACT INFORMATION

Instructor: Bob Hodnett

Email: Rhodnett@lit.edu

Office Phone: 409 257-0065

Office Location: ITC-2 103

Office Hours: Tuesday/Thursday; 4:30-5:00 pm during semester. By appointment only.

REQUIRED TEXTBOOK AND MATERIALS NO Digital text Book - Hardback copy only

1. **Diesel Technology** Fundamentals, Service, Repair
Author: Norman, Corinchock, Scharff
Publisher: Goodheart and Willcox Company, Inc.
ISBN # 978-1-64564-685-3 9th edition *
2. **Diesel Technology Workbook** Fundamentals, Service, Repair
Author: Norman, Corinchock, Scharff
Publisher: Goodheart and Willcox Company, Inc.
ISBN # 978-1-64564-686-0 9th edition *
3. Notebook and 8.5" x 11" notebook paper
4. Blue and Black ink pens

5. Safety glasses and suitable work clothes

Recommended:

6. **In-line 71 Series Service Manual**
Detroit Diesel Corporation
Dealer: Stewart and Stevenson Service, Inc.
Revision May 1994 Will provide use of book for enrolled students.

ATTENDANCE POLICY

1. Missing more than 20% of classes will result in an automatic "F" for the course.
2. Absences are counted for unexcused, excused and coming to class late.
3. Missing more than 20% of a class period will count as an absence.
4. Being tardy 3 times equals 1 absence.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process.
If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

Dates	TOPIC	READINGS Due Dates	ASSIGNMENTS Due Dates
8-26-2025	Course introduction and policies	Review Class Handouts and Lecture 8-28-2025	Read and review Handouts 8-28-2025
8-28-2025	Personal and shop safety precautions Safety guideline that apply to the starting, testing, and stopping of the diesel engine	Detroit Diesel 71 series Service Manual 9-02-2025	Review Handouts Lecture / Shop safety Test on safety 9-02-2025
9-02-2025	Roots Blowers Purpose, design, construction, and operation principles.	Detroit Diesel 71 series Service Manual 9-04-2025	Review Handouts Homework assignment Test on material 9-04-2025
9-04-2025	Fuel pumps Purpose, design, construction, and operation principles.	Detroit Diesel 71 series Service Manual 9-09-2025	Review Handouts Homework assignment Test on material 9-09-2025
9-09-2025	Cylinder heads Purpose, design, construction, and operation principles.	Detroit Diesel 71 series Service Manual	Review Handouts Homework assignment Test on cylinder heads 9-11-2025

9-11-2025	Centrifugal and raw water coolants pumps Purpose, design, construction, and operation principles.	Detroit Diesel 71 series Service Manual 9-16-2025	Review Handouts Homework assignment Test on material 9-18-2025
9-18-2025	Tune up and troubleshooting	Detroit Diesel 71 series Service Manual 9-18-2025	Review Handouts Homework assignment Test over lecture 9-23-2025
9-23-2025	Review, Wrap up and prep for Final subject test	Final Project and Shop organization 9-23-2025	Shop organization
9-25-2025	Lubrication systems Functions	Chapter 10	Lecture, review workbook questions chapter 10
9-30-2025	Engine oils & API service classification, oil analysis,	Chapter 10	Lecture, review & open class quiz chapter 10
10-02-2025	Diesel fuels Hydrocarbons fuels, Relative volatility & distillation	Chapter 14	Lecture, review & open class quiz chapter 14
10-07-2025	Basic fuel system Fuel system components, operating & fundamentals	Chapter 15	Lecture, review & open class quiz chapter 15
10-14-2025	Fuel conditioners Damage by dirt & water	Chapter 16	Lecture, review & open class quiz chapter 16
10-21-2025	Injection system fundamentals Diesel fuel injection systems	Chapter 17	Lecture, review & open class quiz chapter 17
11-04-2025	Injection nozzles Nozzle holders, construction and types	Chapter 18	Lecture, review workbook questions
11-11-2025	Injector removal, Injector testing & disassembly	Chapter 18	Lecture, review ASE questions
11-18-2025	Injector cleaning and reassembly	Chapter 18	Lecture open class test
12-02-2025	Prepare for final exam. Lecture on all studied chapter for final exam	All studied chapters	Class quizzes, lecture from text book Final exam 12-04-2025
12-04-2025	Final project, review and final exam	Clean up work areas	Review semester test and hand out completed materials

Calendar Dates are subject to change due to unforeseen circumstances.

Check blackboard for any changes in due dates in announcements.

COURSE EVALUATION

Final grades will be calculated according to the following

Daily work, quizzes, lab and homework assignment.	40%
Performance Work Grade	35%
Outside assignment or class participation project.	5%
<u>Final Exam</u>	<u>20%</u>
Total	100%

GRADE SCALE

- 90-100 A
- 80-89.9 B
- 70-79.9 C
- 60-69.9 D
- 0-59.9 F

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

1. **No Cell Phone or Electronic Devices** allowed in class, unless it is known to the instructor, for a special reasoning.

All cell phones must be turned off and put away. Text messaging during class time will not be tolerated. Text messaging during an exam will be considered academic dishonesty. The exam will be considered over and the student will receive a zero for the exam.

2. **No** smoking or use of any **tobacco** products allowed
3. Do not bring any **food** or **drinks** in class
4. No visitor allowed in class including children
5. **Do not disturb** lecture for any reason. If you must leave class or come in late, do so without disturbing class.
6. **DRESS CODE:** Proper work attire only, **NO Open shoes, Short pants, low riding, or sleeveless shirts,** will be allowed in any program classrooms.

7. **No** grades will be **dropped**, No homework or assignments can be made up or accepted after instructor has taken up for grading.
8. **Homework** must be done **in proper outline form, neat and legible**, prepared on **loose leaf (8.5" X 11") note book paper**, written only on **one** side.
9. Assignment must be turn in at the beginning of class
10. Any student caught cheating will be dropped from class and given an F for the semester grade.
11. Students are required to be present for all examinations and lectures.
12. There is NO MAKE-UP for missing any quizzes or major test or exams.
13. Learning activities will be subjectively graded by the instructor. Students assigned to a group must be present at all times when the project is being worked on.
14. Instructor will reply to students email in a reasonable time or within 3 working days.

NOTE:

Students who violate any of these policies will be asked to leave class and given an absent for the class period. Students who are continuing disturbing classes will be suspended from class for the remainder of the semester and given an grade of F.

Students may vary in their competency levels on these abilities. You can expect to acquire these abilities only if you honor all course policies, attend classes regularly, complete all assigned work in good faith and on time, and meet all other course expectations of you as a student.

Course Outline

- A. Introduction
 - Introduction of faculty and students
 - Review Syllabus
 - Review Class Policies
 - Reviewing Student Enrollment
- B. Personal and shop safety precautions
 1. General safety rules
 2. Safety guideline that apply to the starting, testing, and stopping of the diesel engine
- C. Roots Blowers
 1. Purpose, design, construction, and operation principles.
 2. Air box requirements
 3. Removal, disassemble, and cleaning.

4. Inspection and repairs.
5. Assembly, testing, and adjusting

D. Fuel pumps

1. Purpose, design, construction, and operation principles.
2. Fuel flow requirements
3. Removal, disassemble, and cleaning.
4. Inspection and repairs.
5. Assembly, testing, and adjusting

E. Cylinder heads

1. Purpose, design, construction, and operation principles.
2. Removal, disassemble, and cleaning.
4. Inspection, repairs and rebuild of head components.
5. Assembly, testing, and adjusting

F. Centrifugal and raw water coolants pump

1. Purpose, design, construction, and operation principles.
2. Removal, disassemble, and cleaning.
3. Inspection and repairs.
4. Assembly, testing, and adjusting