

COURSE TITLE (Diesel Engine Testing and Repair II)
(DEMR 2412 3A3 and 5A3)

CREDIT

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

MODE OF INSTRUCTION

Face to Face

PREREQUISITE/CO-REQUISITE:

DEMR 1401

COURSE DESCRIPTION

Coverage of testing and repairing diesel engines including related systems and specialized tools. This is a capstone course for the Certificate of Completion in Advanced Engine Technology.

COURSE OBJECTIVES

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

1. Identify, inspect, test and measure engine parts.
2. Proper demonstrate disassemble and reassemble engine parts.
3. Identify operating principles explain horsepower and related terms and discuss shop safety procedures
4. Proper demonstrate engine disassembly and diagnosis.
5. Build employability skills such as attitude, critical thinking, reading, writing, adaptability, and work ethic

INSTRUCTOR CONTACT INFORMATION

Instructor: Pete Matak III

Email: pmatak@lit.edu

Office Phone: 409 247 5058

Office Location: ITC-2 104

Office Hours: Monday / Wednesday 1:30 – 2:30 pm During semester

REQUIRED TEXTBOOK AND MATERIALS

1. **Diesel Technology** Fundamentals, Service, Repair
Author: Norman, Corinchock, Scharff
Publisher: Goodheart and Willcox Company, Inc.
ISBN # 978-1-64564-685-3 9th edition *

Approved: PMIII / 1-08-2024



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 *
 Notebook and 8.5" x 11" notebook paper
3. Blue and Black ink pens
4. Safety glasses and suitable work clothes

Recommended :

5. **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

Week	TOPIC	READINGS	ASSIGNMENTS
1	Course introduction and policies Personal and shop safety precautions General safety rules apply to student conduct	Review Class Handouts and Lecture Detroit Diesel 71 series service Manual	Read and review Handouts Handouts Test on safety
2	Fuel systems Purpose, design, construction, and operation principles. Chapter Exercises	Detroit Diesel 71 series service Manual Chapter 20	Review Handouts Complete Review, ASE and workbook questions

3	Governors and weight assembly Purpose, design, construction, and operation principles.	Detroit Diesel 71 series Service Manual Chapter 23	Review Handouts Homework assignment Visual identification in lab Test on material
4	Injectors Purpose, design, construction, and operation principles	Detroit Diesel 71 series Service Manual Chapter 21	Review Handouts Homework assignment Visual identification in lab Test on material and fuel system
5	Electrical starter motors Types testing and rebuilding	Detroit Diesel 71 series Service Manual	Lab: Performance Exercises Project: As Assigned Performance test
6	Engine tune-up Governors types and application	Detroit Diesel 71 series Service Manual	Performance Exercises Perform tune up Performance test Project: As Assigned
7	Engine start up procedures Preliminary checks Engine Operation	Detroit Diesel 71 series Service Manual Run able engine	Explain start up procedure Monitoring systems Performance test Start rebuild engine
8	Semester shop follow up	Final Project and Shop organization	Review and Handouts Lecture and Review Final to be announced End of semester

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

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

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.

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, except in special circumstances and it is approved by the instructor.

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. 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.

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
 - a. Introduction of faculty and students
 - b. Review Syllabus
 - c. Review Class Policies
 - d. Review Student Enrollment
- B. Personal and shop safety precautions
 - a. General safety rules apply to student conduct
 - b. Safety Precaution for each tasks
 - c. Use of personal protection equipment
- C. Fuel systems
 - a. Purpose, design, construction, and operation principles.
 - b. Removal, disassemble, and cleaning.
 - c. Inspection and repairs.
 - d. Assembly, testing, and adjusting

- D. Governors and weight assembly
 - a. Purpose, design, construction, and operation principles.
 - b. Removal, disassemble, and cleaning.
 - c. Inspection and repairs.
 - d. Assembly, testing, and adjusting
- E. Injectors
 - a. Purpose, design, construction, and operation principles.
 - b. Rebuild and calibration
- F. Electrical starter motors
 - a. Types
 - b. Testing and rebuilding
- G. Engine tune-up
 - a. Governors types and application
 - b. Valve lash adjusting procedure
 - c. Injectors adjusting procedure
 - d. Proper governor adjustment procedures
- H. Engine start up procedures
 - a. Preliminary checks
 - b. Pre- lube engine oil
 - c. Priming fuel system
- I. Engine Operation
 - a. Monitoring systems
 - b. Mechanical integrity
 - c. Troubleshooting