

## COURSE TITLE (Diesel Engine Testing and Repair II (DEMR 2412 6A1)

### CREDIT

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

### MODE OF INSTRUCTION

Face to Face

### PREREQUISITE/CO-REQUISITE:

DEMR 1401



**LAMAR INSTITUTE  
OF TECHNOLOGY**

### 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: Troy Burnett

Email: [taburnett@lit.edu](mailto:taburnett@lit.edu)  
[tburnet@bmtisd.com](mailto:tburnet@bmtisd.com)

Office Phone: 409-617-5751  
409 247 5058

Office Location: ITC-2 103

Office Hours: Varies Tuesday / Thursday 4:00 – 5:00 pm

### 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; 9<sup>th</sup> edition

2. **Diesel Technology Workbook** Fundamentals, Service, Repair  
 Author: Norman, Corinchock, Scharff  
 Publisher: Goodheart and Willcox Company, Inc  
 ISBN # 978-1-64564-686-0; 9<sup>th</sup> 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

**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**

<b>Week</b>	<b>TOPIC</b>	<b>READINGS</b>	<b>ASSIGNMENTS</b>
1	Course introduction and policies <ul style="list-style-type: none"> <li>• Lecture</li> <li>• Lab: Practice</li> </ul>	Review Class Handouts and Lecture	Read and review Handouts
2	Personal and shop safety precautions <ul style="list-style-type: none"> <li>• General safety rules apply to student conduct</li> <li>• Lecture</li> </ul>	Detroit Diesel 71 series service Manual	Handouts Test on safety
3-4	Fuel systems <ul style="list-style-type: none"> <li>• Purpose, design, construction, and operation principles.</li> <li>• Lecture / Chapter Exercises</li> <li>• Take Work keys test</li> </ul>	Detroit Diesel 71 series service Manual Chapter 20	Review Handouts Complete Review, ASE and workbook questions

5-6	<p>Governors and weight assembly</p> <ul style="list-style-type: none"> <li>• Purpose, design, construction, and operation principles.</li> <li>• Lecture</li> <li>• Lab: Chapter Exercises</li> <li>• Test on components</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p> <p>Chapter 23</p>	<p>Review Handouts</p> <p>Homework assignment</p> <p>Visual identification in lab</p> <p>Test on material</p>
7-8	<p>Injectors</p> <ul style="list-style-type: none"> <li>• Purpose, design, construction, and operation principles</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p> <p>Chapter 21</p>	<p>Review Handouts</p> <p>Homework assignment</p> <p>Visual identification in lab</p> <p>Test on material and fuel system</p>
9	<p>Electrical starter motors</p> <ul style="list-style-type: none"> <li>• Types testing and rebuilding</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p>	
10-11	<p>Engine tune-up</p> <ul style="list-style-type: none"> <li>• Governors types and application</li> <li>• Lecture</li> <li>• Lab: Performance Exercises</li> <li>• Project: As Assigned</li> <li>• Performance test</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p>	<p>Perform tune up</p>
12-13	<p>Engine start up procedures</p> <ul style="list-style-type: none"> <li>• Preliminary checks</li> <li>• Lecture</li> <li>• Lab: As Assigned</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p> <p>Run able engine</p>	<p>Explain start up procedure</p>
14-15	<p>Engine Operation</p> <ul style="list-style-type: none"> <li>• Monitoring systems</li> <li>• Performance test</li> </ul>	<p>Detroit Diesel 71 series Service Manual</p> <p>Lecture</p> <p>Run able engine</p>	<p>Lab: As Assigned</p> <p>Start rebuild engine</p>
16	<p>Semester shop follow up</p>	<p>Final Project and Shop organization</p>	<p>Review and Handouts</p> <p>Lecture and Review</p> <p>Final to be announced</p> <p>End of semester</p>

## **COURSE EVALUATION**

Final grades will be calculated according to the following criteria:

Daily work, quizzes, lab and homework assignment.	<b>35%</b>
Performance Work Grade	<b>35%</b>
Attendance Test.	<b>10%</b>
<u>Final Exam</u>	<b><u>20%</u></b>
<b><i>Total</i></b>	<b>100%</b>

## **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](mailto: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](http://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 put away in the classroom lock box.***

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