Diesel Engine Testing and Repair II (DEMR 2412)

Credit: 4 semester credit hours (3 hours lecture, 4 hours lab)

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.

Required Textbook and Materials

1. **Diesel Technology** Fundamentals, Service, Repair
   Author: Norman, Corinchock, Scharff
   Publisher: Goodheart and Willcox Company, Inc.
   ISBN # 978-161960-832-0 ; 8th edition
2. **Diesel Technology Workbook** Fundamentals, Service, Repair
   Author: Norman, Corinchock, Scharff
   Publisher: Goodheart and Willcox Company, Inc
   ISBN # 978-161960-835-1 ; 8th 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

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

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

Grade Scale

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

Course Evaluation

Final grades will be calculated according to the following criteria:

Daily work, quizzes, lab and homework assignment.	**35%**
Performance Work Grade	**35%**
Outside assignment or class presentation.	**10%**
Final Exam	**20%**
Total	***100%***

Course Requirements

1. Complete specific reading assignments in a timely manner specified by the instructor.
2. Seek out available material on the subject being taught, utilizing the library, periodicals and / or the Internet.
3. Wear sleeved shirts, full length jeans or work pants and preferably leather shoes to class and on campus. No shorts or tank tops are allowed.
4. Participate in project interview when offered.
5. Complete all work book and class assignments.
6. Be present at class sessions and examinations as scheduled.

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.

If you wish to drop, you are responsible for the drop process. I will not initiate the drop, no matter how many absences or zeroes you have; that is, if you stop coming to class and do not drop, you will earn an F in the course.

Students are allowed only 6 drops, from any public Institute of higher education, in their lifetime.

Course Policies

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.

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.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

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 or obtained in print upon request at the Student Services Office.

Course Schedule

Week	Topic	Reference
1	Course introduction and policies	Handouts
2	Personal and shop safety precautions • General safety rules apply to student conduct • Lecture • Test on safety	Detroit Diesel Manual Handouts

3-4	Fuel systems • Purpose, design, construction, and operation principles. • Lecture / Chapter Exercises • Take Work keys test	Detroit Diesel Manual Chapter 20
5-6	Governors and weight assembly • Purpose, design, construction, and operation principles. • Lecture • Lab: Chapter Exercises • Test on components	Detroit Diesel Manual Chapter 23
7-8	Injectors • Purpose, design, construction, and operation principles • Lecture • Lab: Chapter Exercise • Test on fuel systems	Detroit Diesel Manual Chapter 21
9	Electrical starter motors • Types testing and rebuilding • Lecture	Detroit Diesel Manual
10-11	Engine tune-up • Governors types and application • Lecture • Lab: Performance Exercises • Project: As Assigned • Performance test	Detroit Diesel Manual Run able engine
12-13	Engine start up procedures • Preliminary checks • Lecture • Lab: As Assigned	Handouts Detroit Diesel Manual Run able engine
14-15	Engine Operation • Monitoring systems Lecture • Lab: As Assigned • Performance test • Take national competency test	Detroit Diesel Manual Run able engine
16	Final Project, Review and Exam • Final review • Final to be announced	Handouts Detroit Diesel Manual Run able engine

The following course schedule will be adhered to in the main but should not be regarded as being set in stone. The instructor may make changes to the schedule, but you will be informed of any changes in class. If you are absent on a day in which changes to the schedule have been announced, it is your responsibility to find out those changes.