COURSE TITLE **Diesel Engines I (DEMR 1306 6A1)**

CREDIT

3 Semester Credit Hours (3 hours lecture, 1 hour Lab)

MODE OF INSTRUCTION

Face to Face

PREREQUISITE/CO-REQUISITE:

Co-Requisite :(DEMR 1401)

COURSE DESCRIPTION

An introduction to the basic principles of diesel engines and related systems.

COURSE OBJECTIVES

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

1. Describe the history of diesel engines and diesel systems and their Evolution.
2. Demonstrate knowledge of the basic principles of diesel systems and engines and how they function.
3. Demonstrate knowledge precision instruments to diagnose and repair basic systems and engines.

INSTRUCTOR CONTACT INFORMATION

Instructor: Bryson Jyo

Email: brjyo@lit.edu

Office Phone:

Office Location:

Office Hours:

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 *
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 *
4. Notebook and 8.5” x 11” notebook paper

Approved: PMIII / 8-18-2023 pm3

5. Blue and Black ink pens

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 Class Policies	Lecture / Handouts Student Blackboard	Review Handouts and Class Quizzes Complete assigned Review, ASE and Workbook Questions. Class Quizzes
2-3	Career Opportunities and ASE Certification	Chapter 28 Lecture on applications Test over chapter 28	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 28 Test
4-5	Workplace Employability Skills	Chapter 29 Lecture on applications Test over chapter 29	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 29 Test
5-6	Diesel Engine History	Chapter 1 Lecture Early Theories and Success The Development of the Diesel Engine Diesel Versus Gasoline Lecture / Diesel Drawbacks Test over chapter 1	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 1 Test

7-10	Principles of Operation	Chapters 4 Lecture Major Engine Components Designs and Functions Types of Diesel Engine Classification Test over chapter 4	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 4 Test
11-13	Air Intake Systems	Chapters 12 Lecture Effects of Air Intakes Type and Function of Scavenging and Superchargers Test over chapter 12	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 12 Test
14-15	Exhaust Systems	Chapter 13 Lecture Environmental Regulations and Back pressure Exhaust System Components Test over chapter 13	Complete assigned Review, ASE and Workbook Questions. Class Quizzes Chapter 13 Test
16	Final Project, Review and Final Exam	Prepare for final exam Lecture	Review semester completed materials

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Daily work, quizzes, and homework assignment.	**45%**
Test over Lecture and Chapters	**30%**
Class participation/Attendance Test.	**5%**
Final Exam	**20%**
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.

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. 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.
13. 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
   1. Introduction of faculty and students
   2. Review Syllabus
   3. Review Class Policies
   4. Review Student Enrollment

B. Career Opportunities
   1. The Diesel Field
   2. Employment Availability and Wages
   3. Teaching Positions and Requirements
   4. Certification and Specialists
   5. Working in the Field

C.) Introduction to Diesel Engines

1. Diesel Versus Gasoline
2. Diesel Drawbacks
3. Diesel Engine History
4. Early Theories and Successes
5. The Development of the Diesel Engine
6. Continued Development of the Diesel Engine
7. Modern Diesel Applications
8. Modifications to Increase Diesel Engine Efficiency

D.) Principles of Operation
1. Major Engine Components Designs and Functions
2. Types of Diesel Engine Classification
3. Four-Stroke Cycle Operation
4. Two-Stroke Cycle Engine Operation
5. Cylinder Number and Configuration of the Engine

E.) Combustion Chamber Designs
1. Types of Fuel Injection Systems
2. Engine Performance Terms and Formulas
3. Development of Horsepower and Torque

F.) Air Intake Systems
1. Effects of Air Intakes
2. Type and Function of Scavenging and Superchargers
3. Use and Types of Air Cleaners
4. Dry Air Filter Elements
5. Additional Service Tips
6. Servicing the Air Filter Elements
7. Intake Air Silencers Operations
8. Blowers and Supercharger Types

G.) Exhaust Systems
1. Environmental Regulations and Back pressure
2. Exhaust System Components
3. Types of Mufflers
4. Mufflers Used on Turbocharged Engines
5. Exhaust System Service
6. Turbocharger Components and Operation
7. Turbocharger Advantages and Lubrication
8. Turbocharger Inspection and Troubleshooting
9. Turbocharger Removal and Installation
10. After coolers (Intercoolers) Types and Services
11. Exhaust Pyrometers Uses
12. Exhaust Brakes Systems
13. Controlling Diesel Engine Emissions
14. Catalytic Converter or Silencer Operations and Designs