# COURSE TITLE (Fuel Systems (DEMR 1313 5A2)

**CREDIT**
3 Semester Credit Hours (0 hours lecture 1 hour lab)

**MODE OF INSTRUCTION**
Face to Face

**PREREQUISITE/CO-REQUISITE**:
None

**COURSE DESCRIPTION**
In-depth coverage of fuel injector pumps and injection systems used in Diesel Engines.

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

1. Identify various components of injector pumps and systems.
2. List and explain the five major jobs of a diesel fuel system.
3. Name and describe the function of fuels and engine oils used in a diesel engine.
4. Know the operation fundamentals of the basic fuel system.
5. List the four primary tasks of lubricating oil and their properties

**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 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

Approved: PMIII / 1-30-2026

**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**

| DATE<br>Weeks | TOPIC | READINGS<br>Due Dates | ASSIGNMENTS<br>Due Dates |
|---|---|---|---|
| **1-20-2026**<br><br>**Week 1** | **Course Introduction and Class Policies**<br>**Lubrication Systems**<br>**Lubricating Systems**<br>**Functions** | **Lecture / Handouts**<br><br>**Chapter 10**<br><br>**1-21-2026** | **Review Handouts and Class Quizzes**<br>**Complete assigned Review, ASE and Workbook Questions.**<br>**Class Quizzes**<br>**Lecture from textbook**<br>**Test over system**<br>**1-22-2026** |
| 1-26-2026<br><br>Week 2 | Lubrication Systems<br>Lubricating Systems<br>Functions<br>Engine Oils and API Service Classification, Oil Analysis | Chapter 10<br><br>1-28-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system<br>1-29-2026 |
| 2-2-2026<br><br>Week 3 | Diesel Fuels<br>Hydrocarbon Fuels, Relative Volatility, and Distillation | Chapter 14<br><br>2-4-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system<br>2-5-2026 |
| 2-9-2026<br><br>Week 4 | Basic Fuel Systems<br>Fuel System Components and Operating Fundamentals | Chapter 15<br><br>2-11-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system :2-12-26 |

| | | | |
|---|---|---|---|
| 2-16-2026<br><br>Week 5 | Fuel Filters and Conditioners<br>Damage by Dirt and Water | Chapters 16<br><br>2-18-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system: 2-18-26 |
| 2-23-2026<br><br>Week 6 | Injection System Fundamentals<br>Diesel Fuel Injection Systems | Chapters 17<br><br>2-25-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system<br>2-26-2026 |
| 3-2-2026<br><br>Week 7 | Injection Nozzles<br>Nozzle Holders, Constructions, and Types | Chapter 18<br><br>3-4-2026 | Complete assigned Review, ASE and Workbook Questions.<br>Class Quizzes<br>Lecture from textbook<br>Test over system 3-5-26 |
| 3-16-2026 | Final Project, review and final exam | Prepare for final exam<br><br>3-18-2026 | Review semester Final exam<br>3-19-2026 |

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 criteria:

| | |
|---|---|
| Daily work, quizzes, and homework assignment. | **45%** |
| Test over Lecture and Chapters | **30%** |
| Outside assignment or class participation. | **5%** |
| Final Exam | **20%** |

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

B.) Lubrication Systems
1. Lubricating Systems Functions
2. Lubrication System Components and Types of Lubrication Systems
3. Types of Oil Coolers and Servicing
4. Oil Pressure Relief Valve Functions and Types
5. Types of Oil Filters and Servicing
6. Oil Pressure Indication Systems
7. Engine Oils and API Service Classification
8. Oil Analysis

C.) Diesel Fuels
1. Hydrocarbon Fuels, Relative Volatility, and Distillation
2. Diesel Fuel Grades, Properties, and Qualities
3. Fuel Additives Handling and Storage
4. Alternative Fuels Uses and Types

D.) Basic Fuel Systems
1. Fuel System Components and Operating Fundamentals
2. Fuel Tanks Inspection and Service
3. Fuel Lines Types and Uses
4. Fuel Transfer Pumps Operation and Service

E.) Fuel Filters and Conditioners
1. Damage by Dirt and Water
2. Filtration Devices and Systems
3. Servicing Filters

F.) Injection System Fundamentals
1. Diesel Fuel Injection Systems
2. Timing and Metering of Fuel Systems
3. Electronic Metering Systems Operations

G.) Injection Nozzles Holders, Constructions, and Types
1. Servicing Fuel Injector Holders and Nozzles
2. Pencil Nozzles Operation and Service