

Shop Safety and Procedures (DEMR 1401)



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

Prerequisite/Co-requisite: DEMR 1306

Course Description

A study of shop safety, rules, basic shop tools, and test equipment used with Diesel Engines.

Required Textbook and Materials

1. Diesel Technology Fundamentals, Service, Repair
Author: Norman, Corinchock, Scharff
Publisher: Goodheart and Willcox Company, Inc.
ISBN # 978-1-61960-832-0, 8th edition
2. Diesel Technology Workbook Fundamentals, Service, Repair
Author: Norman, Corinchock, Scharff
Publisher: Goodheart and Willcox Company, Inc
ISBN # 978-1-61960-835-1, 8th edition
3. **Shop Tools** Fundamentals of Service
Author: Deere and Company
ISBN # 978-086691-389-0 ; 7th edition
4. **Fasteners** Fundamentals of Service
Author: Deere and Company
ISBN # 978-086691-349-1 ; 6th edition
5. **Hoses, Tubing, and Connectors** Fundamentals of Service
Author: Deere and Company
ISBN # 978-086691-388-2 ; 3rd edition
6. Notebook and 8.5" x 11" notebook paper
7. Blue and Black ink pens
8. Safety glasses and suitable work clothes

Recommended : Optional

1. **In-line 71 Series Service Manual**
Detroit Diesel Corporation
Dealer: Stewart and Stevenson Service, Inc.
Revision May 1994

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

Course Objectives Identify and use basic hand tools.

1. Use and take care of special measuring tools.
2. Describe shop procedures.

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3. Properly use personal protection equipment.
4. List procedure for handling and dispose of hazardous materials.

Course Outline

- A. Shop Orientation
 1. Lab policies
 2. Tool room duties
 3. Housekeeping assignment
- B. Shop Safety
 1. General shop safety regulation
 2. Personal Safety
- C. Proper Handling of Hazardous Material
 1. Classification
 2. MSDS sheets
 3. Disposal of waste material
- D. Tools and Shop Equipment
 1. Identify
 2. Use of tools properly
- E. Precision measuring tools
 1. Outside micrometer
 2. Inside micrometer
 3. Dial micrometer
 4. Miscellaneous measuring tool
- F. Types of Hand Tools
 1. Wrenches
 2. Sockets
- G. Types of Power Tools
 1. Electrical
 2. Air operated
- H. Types of Pullers
 1. Hand
 2. Power
- I. Shop Equipment
 1. Presses
 2. Hoists
 3. Jacks
 4. Vises
- J. Threaded Fasteners
 1. Importance of Fasteners
 2. Bolts, Cap Screws & Nuts
 3. Adhesives & Sealants
 4. Tables, Torques, & Metrics
- K. Metal Drilling
 1. Drill bit types
 2. Sharpening
- L. Tubing and Fittings
 1. Bending Flaring
 2. Steel and Copper
- M. Batteries
 1. Testing and Charging
 2. Connections and Circuits
- N. General engine information
 1. Use of manuals
 2. Checking specification
 3. General description
 4. Model description
 5. Engine serial, model, and optional plate numbers
 6. General procedure for disassembly
 7. Parts inspection
 8. Use of tools for disassembly
 9. Safety precautions
 1. Personal
 2. Shop
- O. Cleaning Equipment

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%
<u>Final Exam</u>	<u>20%</u>
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

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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 online resource:

<http://www.lit.edu/depts/stuserv/special/defaults.aspx>

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.

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

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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.



Course Schedule

Week	Topic	Reference
1	Course introduction and policies <ul style="list-style-type: none">• Lab: A. Shop Orientation<ol style="list-style-type: none">1. Lab policies2. Tool room duties3. Housekeeping assignment	Handouts
2	Select and properly use hand and power tools Shop and personal safety Handling hazard material Shop equipment use and safety	Diesel Technology Fundamentals / Service / Repair / Chapter 2 & 3
3/4	Use and take care of special measuring tools	Chapter 3 and Hand Out Materials
5/6	<ul style="list-style-type: none">• Write out a service order form• Write out a parts order form• Use shop manuals to find repair procedures• Use computer operations (CD, DVD, and web applications) to locate part numbers	As per hand-out Assignments
7/8/9	Threaded Fasteners <ol style="list-style-type: none">1. Importance of Fasteners2. Bolts, Cap Screws & Nuts3. Adhesives & Sealants4. Tables, Torques, & Metrics5. Test on material	FOS Chapter 1,2, 5, 6 & 7

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10/11	Hoses, Tubing and Connectors 1. Hoses 2. Pipes & Tubes Test on material	FOS Chapters 1, 2, 3 & 4
12/13/14	Practice the use of shop tools <ul style="list-style-type: none">• Outside micrometer• Threaded tools• Fitting and tubing• Drill bits	Text books and Fundamental Service Booklet
15	Conclude shop projects <ul style="list-style-type: none">• Finish group project• Reorganize shop tools• Battery testing and handling	Shop tools and equipment
16	Final Project <ul style="list-style-type: none">• Projects and test• Shop organization• Review for final• Final to be announced	Project to be assigned by the Instructor

The course schedule is a proposed schedule. Changes in the schedule may be made based upon the instructor's professional judgment. 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.

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