

**COURSE TITLE** (Basic Electrical Systems (DEMR 1305 3&5A1)

**CREDIT**

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

**MODE OF INSTRUCTION**

Face to Face

**PREREQUISITE/CO-REQUISITE:**

None

**COURSE DESCRIPTION**

Basic principles of electrical systems of diesel powered equipment with emphasis on starters, alternators, and batteries

**COURSE OBJECTIVES**

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

1. Understand electrical safety and precaution when working with electricity.
- 2) Explain basic electrical principles.
- 3) Take appropriate preventive maintenance measures and solves problems in the use and operation of equipment.
- 4) Explain basic circuit laws.
- 5) Describe proper use of electrical test equipment

**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**

1. Electronics and Electrical Systems  
Fundamentals of Service  
Author: Deere and Company  
ISBN # 978-0-86691-409-9 ; 10th edition



**LAMAR INSTITUTE  
OF TECHNOLOGY**

2. 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 \*
3. 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 \*
4. Notebook and 8.5" x 11" notebook paper
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**

<b>Module</b>	<b>TOPIC</b>	<b>READINGS Due Date</b>	<b>ASSIGNMENTS Due Date</b>
8-26-2024	Course Introduction and Class Policies	Lecture / Handouts Student Blackboard 8-28-2024	Review Handouts and Class Quizzes Complete assigned Handout and Chapter Review Questions. Class Quizzes 8-28-2024
9-3-2024	Electrical Safety Introduction	Chapter 1 Lecture on applications Test over chapter 1 9-4-2024	Complete assigned Handout and Chapter Review Questions. Class Quizzes Chapter 1 Test 9-4-20

9-9-2024	Electrical Safety Awareness	Chapter 1 Lecture on applications Test over chapter 1 9-18-2024	Complete assigned Handout and Chapter Review Questions. Class Quizzes Chapter 1 Test 9-18-2024
9-23-2024	Electrical Theory	Chapter 2 Lecture from Power Points Lecture / Class exercises Test over chapter 2 10-2-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 2 Test 10-2-2024
10-7-2024	Measuring the Electron	Chapters 2 Lecture/ series and parallel circuits Ohms law Exercises Homework assignment Lecture Test over chapter 2 10-16-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 2 Test 10-16-2024
10-21- 2024	Diagrams and Schematic Symbols	Chapters 2 Reviewing Diagrams Symbols Exercises Lecture Test over chapter 2 10-30-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 2 Test 10-30-2024
11-4-2024	Electrical Components	Chapter 3 Lecture Class assignments Test over chapter 3 11-13-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 3 Test 11-13-2024
11-18- 2024	Storage Batteries and Charging Systems	Chapter 5 Lecture Class assignments Test over chapter 5 11-20-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 5 Test 11-20-2024

11-25-2024	Connectors	Chapter 11 Lecture Class assignments Introduction Identify common connectors Chapter Test 11 12-2-2024	Complete assigned Handout and Chapter Review Questions. DVD's Class Quizzes Chapter 11 Test 12-2-2024
12-2-2024	Final Project, Review and Final Exam	Prepare for final exam Final Exam to be announced Lecture 12-9-2024	Review semester test and handout completed materials 12-9-2024

*Calendar dates are subject to change due to unforeseen circumstances.  
Check Blackboard for any changes in due dates*

### **COURSE EVALUATION**

Final grades will be calculated according to the following criteria:

Daily work, quizzes, and homework assignment.	<b>45%</b>
Test over Lecture and Chapters	<b>30%</b>
Outside assignment or class participation.	<b>5%</b>
<u>Final Exam</u>	<b><u>20%</u></b>
<b>Total</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 \(lit.edu\)](https://www.lit.edu/specialpopulations).

### **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.

### **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. Review Student Enrollment
- B. Electricity and Electrical Safety

1. Electrical Safety Systems
  2. Shop practice and work habit
  3. Noise protection
- C.) Electricity – How it works
1. Electrical and Electron theory
  2. Introduction to current, voltage, and resistance
- D.) Measuring the Electron
1. Ohm's law
  2. Types of circuits
- E Diagrams and schematic symbols
1. System wiring schematic
  2. System wiring diagram
- F. Electrical components
1. Wiring
  2. Switches
  3. Resistor
- G. Storage Batteries
1. How a battery works
  2. Types of batteries
  3. Checking and charging
  4. Handling of battery
- H. Charging circuits
1. Operations of system
  2. Types of systems
- I. Connectors
1. Introduction
  2. Common types of connector