



**I. COURSE DESCRIPTION:**

The Electrical Systems course is designed to teach and enhance the student(s) theoretical and practical knowledge in automotive electrical and electronic systems and components used on-road truck and trailer, bus, and coach type vehicles. Students will be given an in depth training on electrical & electronic components and controls of the charging system learning how to follow the manufacturers' service procedure for electrical schematics, disassembly and assembly of the alternator and the correct method to properly test the system for starter current draw and volt drops across cables, switches and solenoids. Students will also be taught how to test and repair electronic control devices used for multiplexing of the truck and coach cab and chassis and engine systems. The student(s) will be taught how to use various types of electrical test equipment applicable for diagnosing electrical and electronic management systems.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

**Upon successful completion of this course, the student will demonstrate the ability to:**

1. Define the fundamentals of safe practices and procedures when working with electrical and electronic systems.
2. Define the differences between light and heavy duty charging systems used for truck and coach systems.
3. Perform the inspection, testing and repairs to the charging systems with manual and electronic testing equipment according to manufacturers specifications.
4. Define the purpose, construction and operation of the electronic cab and chassis multiplexing systems.
5. Disassemble, bench test internal components, reassemble and dynamically test the alternator according to Manufacturer Specifications.
6. Perform testing and repairs to light duty electronic ignition systems and components used on gasoline fuel type vehicles used in the light duty truck application.
7. Perform testing and repairs to the electrical accessories, and auxiliary systems, such as lighting circuits, windshield wiper system and auxiliary cab convenience equipment.

**III. TOPICS:**

1. Electrical and Electronic fundamentals
2. Heavy Duty Truck & Coach Electrical Schematics
3. Heavy Duty Truck and Coach Charging Systems
4. Truck & Coach Cab and Chassis Electrical Systems
5. Electronic Controls and Systems testing and diagnosis
6. Light duty truck ignition systems

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

**Hand outs provided by instructor as well as text books requested by department as per booklist.**

**V. EVALUATION PROCESS/GRADING SYSTEM:**

***Students will be tested on the material covered per apprenticeship curriculum by multiple choice questions, assignments, and practical tests. The weigh factor for each area of testing will be as follows:***

|                 |      |
|-----------------|------|
| Theory Tests    | 50 % |
| Practical Tests | 30 % |
| Assignments     | 20 % |

This evaluation can change depending on the emphasis placed on each of the above testing procedures.

The following semester grades will be assigned to students:

| <b>Grade</b> | <b><u>Definition</u></b>                          | <b><i>Grade Point Equivalent</i></b> |
|--------------|---|--------------------------------------|
| A+           | 90 – 100%   | 4.00                                 |
| A            | 80 – 89%  | 3.00                                 |
| B            | 70 - 79%  | 3.00                                 |
| C            | 60 - 69%  | 2.00                                 |
| D            | 50 – 59%  | 1.00                                 |
| F (Fail)     | 49% and below                                     | 0.00                                 |
| CR (Credit)  | Credit for diploma requirements has been awarded. |                                      |

|    |  |
|----|--|
| S  | Satisfactory achievement in field /clinical placement or non-graded subject area.  |
| U  | Unsatisfactory achievement in field/clinical placement or non-graded subject area.   |
| X  | A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. |
| NR | Grade not reported to Registrar's office.  |
| W  | Student has withdrawn from the course without academic penalty.  |

## VI. SPECIAL NOTES:

### Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

### Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

### Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

### Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

**VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.