



**I. COURSE DESCRIPTION:**

Electrical systems in the CV&E course is designed to teach the students the fundamentals of automotive electrical systems on all types of on-road, off-road and stationary equipment used in the Commercial Vehicle and Equipment market. In this course students will be taught the laws of electricity pertaining to alternating current (AC) and direct current (DC). The students will be taught how to use the different types of test equipment and how to properly test electrical circuits and components. Students will learn how to calculate the electrical requirements to build, repair and provide the necessary electrical circuit protection. The course will also cover the construction, theory of operation and testing of the major electrical and electronic components such as batteries, relays, solenoids, switching devices and conducting cables necessary for the operation of these types of circuits.

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

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

- Define the purpose, fundamentals and laws of electricity.
- Perform the required calculations for electricity based on Ohms Law, Kirchoff's Law and Watt's Law.
- Demonstrate the proper usage of the testing equipment required to analyze and test electrical and electronic circuits and components.
- Diagnose electrical/ electronic system problems.
- Interpret Manufacturer electrical schematics essential to the proper repair of electrical circuits.
- Perform disassembly and assembly procedures of electrical components according to the Manufacturer Specifications and safe working procedures.
- Perform specific battery tests according to Manufacturers' specifications applying safe working practices.

**III. TOPICS:**

1. Introduction to Electricity
2. Battery Fundamentals and Service
3. Electrical Test Equipment
4. Electrical Circuits and Calculations
5. Electrical Circuit and Protection Devices
6. Electrical Circuit Repair
7. Electromagnetic Devices
8. Battery Tests and Testing Procedures

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:****Text Book:**Heavy Duty Truck System 5<sup>th</sup> Edition

Author: Bennett

Publisher: Thomson Nelson Learning Canada

Pens, Pencils, Calculator and 3 Ring Binder

**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%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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.	

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

## VI. SPECIAL NOTES:

### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

### Late Arrivals for Class

***It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will only be granted admission to the room at the Instructors discretion***

## VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.