



**I. COURSE DESCRIPTION:**

Electronic management systems in the level 2 course is designed to teach the students the fundamentals of Vehicle Computer systems used on all types of on-road vehicle and towing equipment used in the Commercial Vehicle and Equipment market. In this course students will be taught how the vehicle and equipment computers operating system works and the types of input sensors and output sensors required on the vehicle and equipment to enable them to . The students will be taught how to use the different types of Electronic Scan Tools for accessing information to diagnose and test the electrical/electronic circuits and components of the engine and power-train management systems. Students will learn how the names of different types of electronic sensors and how they operate. The course will also cover the theory and impact of management and control for engine emissions related to fuel injection and combustion principles.

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

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

1. Define the purpose, fundamentals and characteristics of both Ac and DC electricity, and electronic circuits and components used on Heavy duty and Medium duty Truck and Coach Systems.
2. Perform the required calculations for electrical/electronic circuits based on Ohms Law, Kirchoff's Laws for voltage and amperage and Watt's Law for power as applied to series, parallel and series-parallel circuits.
3. Explain the relationship of SAE communications protocols to electronic management systems.
4. Explain what the terms, Rom, Prom, EEPROM, Reference voltage, data links, inputs, outputs, analog and digital signals refer to.
5. Demonstrate the proper use of the EST testing equipment required to analyze and test electrical and electronic systems and circuits and components.
6. Diagnose electrical/electronic wiring system problems and perform wire connector terminal repair procedures according to manufacturer standards.

7. Perform proper testing procedures on input and output devices used in electronic management systems according to Manufacturers' safe working and handling procedures and specifications.

### III. TOPICS:

1. Introduction to Electronic Management Systems
2. SAE Communication Protocols
3. Vehicle Computer Terminology
4. Electronic Input and output devices
5. Electronic Scan Tool testing equipment
6. Electrical/Electronic Circuit Repair
7. Electronic Sensor testing

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

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

Text Book: Heavy Duty Truck Systems

Edition: 4<sup>th</sup> ed., 12959#

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>	<i>Grade Point Equivalent</i>
A+	90 – 100%	
A	80 – 89%	4.00
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.	

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.***

***Failure to show up for a Test either theory or practical will result in an "F" grade unless prior arrangements have been made with the Instructor.***

***Re-writes of theory tests are only allowed at the Instructors discretion and any Student that re-writes a test will be given a maximum of 60%.***

Use of Cell Phones in Class:

**Cell phones will not be allowed to be turned on in the classroom during regular teaching periods and students breaking this rule will be asked to leave the classroom.**

**VII. COURSE OUTLINE ADDENDUM:**

The provisions contained in the addendum located in D2L and on the portal form part of this course outline.