

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: Vehicle Electronic Management & Emission Systems

CODE NO. : TCT815 **APP Level:** THREE

PROGRAM: Truck and Coach Technician – Level 3
Apprenticeship

AUTHOR: Sylvain Belanger

DATE: February 2017 **PREVIOUS OUTLINE DATED:** February 2016

APPROVED: *"Corey Meunier"* Dec '16
CHAIR

TOTAL CREDITS: 4

PREREQUISITE(S): Truck and Coach Technician – Level 2

HOURS/WEEK: 21 hours/week for eight weeks

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 Technology & Skilled Trades
 (705) 759-2554, Ext. 2610*

I. COURSE DESCRIPTION:

The Vehicle Electronic Management and Emission Systems course is designed to teach and enhance the student(s) theoretical and practical knowledge of the Electronically controlled Emission Systems used in on-road Medium and Heavy truck, bus, and coach type vehicles. Students will be given in depth training on electrical & electronic components and controls of the Emission Systems and learn how to test and repair component used to control the proper combustion and emission output levels of the exhaust system. The student(s) will be taught how to use various Electronic Scan Tools required for testing the Electronic Control Modules, and the individual emission control system components for fault codes and proper operation. Students will also learn the theory of operation for collision avoidance systems and new hybrid propulsion systems used in the Truck and Coach Industry.

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 Purpose of Customer and Proprietary Data programming for Medium and Heavy Duty truck and coach Engines .
3. Identify the functions, construction and application of Customer and Proprietary data programming.
4. Explain the purpose and fundamentals of Multiplexing Communications for Truck and Coach Vehicle Systems.
5. Explain the purpose and fundamentals of emission controls on Truck and Coach engine systems
6. Perform inspection, testing and diagnosis of Diesel Engine Emission Systems and components
7. Explain the purpose and fundamentals of a Hybrid Drive System.
8. Identify the construction, operation and application of Hybrid Systems.

9. Explain the fundamentals of Truck and Coach Collision Avoidance Systems
10. Perform testing, Inspection and diagnostics of Collision Avoidance Systems

III. TOPICS:

1. Electrical and Electronic fundamentals
2. Customer Proprietary Data Programming
3. Heavy Duty Truck and Coach Electronic Multiplexing Systems
4. Emission Controls and Testing
5. Hybrid Drive Systems
6. Collision Avoidance Systems
7. Electronic Scan Tools
8. Electronic Scan Tool Testing

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Medium/Heavy Duty Truck Engines, Fuel and Computerized Management Systems.
4th Edition
Author: Sean Bennett

Heavy Duty Truck Systems, 5th ed.,
Author: Bennett
Publisher: Thomson Nelson Learning Canada

3 Ring Binder, pens, pencils, paper and calculator

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:

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

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

VII. COURSE OUTLINE ADDENDUM:

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