



**I. COURSE DESCRIPTION:**

The Fuel Systems course is designed to teach and enhance the student(s) theoretical and practical knowledge of the Electronically controlled Fuel 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 Fuel Systems and learn the construction and operation of different manufacturer Fuel Systems. Students will also be taught how to test and repair electronic control devices used to control the operation of metering, timing and injection of the fuel. The student(s) will be taught how to use various Electronic Scan Tools required for testing the Electronic Control Modules, Injectors and the individual fuel system components for fault codes and proper operation.

**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 Fuel systems used for Medium and Heavy Duty truck and coach Engines.
3. Describe the major components of the Fuel System and their operation.
4. Define the differences between the Electronic Unit injection, the Hydraulic Electronic Unit Injection and the Common Rail Injection systems.
5. Perform Electronic Scan Tool testing on different model Engines
6. Perform Pin Point Testing of electronic systems and components used on Electronic components of the Diesel fuel system.
7. Perform an Electronic Cylinder Cut out Test of the injection System with an Electronic Scan Tool and
8. Perform a Snapshot of the Fuel System in during a running condition

**III. TOPICS:**

1. Electrical and Electronic fundamentals
2. Heavy Duty Truck & Coach Electronic Controlled Fuel Systems
3. Heavy Duty Truck and Coach Electronic Unit Injection Systems
4. Hydraulic Electronic Unit Injection Systems
5. Common Rail Fuel Injection Systems
6. Electronic Fuel Injection System Controls
7. Electronic Scan Tools
8. Electronic Scan Tool Testing

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

Medium/Heavy Duty Truck Engines, Fuel and Computerized Management Systems, 4<sup>th</sup> Edition

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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%
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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%	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.