



**I. COURSE DESCRIPTION:**

This course is designed to give the Truck & Coach Apprentice(s) the theoretical knowledge of the Hydro- Mechanical types of fuel systems that have been used on diesel engines for trucks, busses and highway tractors. The student(s) will be taught the purpose construction and operation of the Inline port helix metering pumps. Students will be taught how to diagnose system problems, how to test system components, repair and or replace system components properly and safely according to the Manufacturer Service Manual and Specifications. Students will also learn the basic constructions and operation of the newer electronic fuel systems that are currently being used on the latest generation of diesel engines. Students will learn about Gasoline fuel injection and alternate fuels used as well for light, medium and heavy duty engines.

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

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

1. Define the fundamental characteristics and properties of diesel fuel.
2. Define the types of medium duty and heavy duty mechanical fuel injection systems used for on highway truck and coach vehicles.
3. Describe the Construction and operation of the low pressure supply and the high pressure delivery components of the different styles and makes of the mechanical fuel injection system.
4. Perform the recommended testing for the low pressure supply components according to manufacturer procedures.
5. Perform the recommended procedures for testing the high pressure side of the fuel injection systems including fuel injectors and fuel injection pumps.
6. Perform proper removal and installation of the fuel injectors and fuel injection pumps according to the manufacturer's specifications.
7. Explain the fundamental differences of the Partial Authority and the Full Authority electronic fuel injection systems and the basic component changes involved in each system.

**III. TOPICS:**

1. Diesel Fuel and Alternate Fuel systems
2. Mechanical in-line fuel Injection Pumps
3. Gasoline Fuel Injection Systems
4. Partial Authority fuel injection systems
5. Mechanical Injector Principles
6. Proper Testing Procedures
7. Alternate fuels and fuel systems

**IV. REQUIRED RESOURCES or TEXT Books:**

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

**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:

<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.

## **VII. COURSE OUTLINE ADDENDUM:**

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