SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	ENGINE SYSTEMS		
CODE NO. :	TCT702	**LEVEL:**	TWO
PROGRAM:	TRUCK & COACH TECHNICIAN APPRENTICESHIP (6081)		
AUTHOR:	JOHN AVERY		
DATE:	SEPT 2010	**PREVIOUS OUTLINE DATED:**	MAY 2010
APPROVED:	"Corey Meunier" **CHAIR**		_____ **DATE**
TOTAL CREDITS:	FIVE		
PREREQUISITE(S):			
HOURS/WEEK:	39 HOURS TOTAL DURING 8 WEEK PERIOD		

I. COURSE DESCRIPTION:

Engine Systems is designed to provide the proper maintenance and repair procedures for students working on Truck and type Commercial Vehicles and Equipment. On this course students will learn about the different types of diesel engines used and the components that are essential to the upper cylinder head and valve train area of a wide variety of diesel engines makes and models. Students will learn the names of all of the components and the relationship to the proper operation of the engine. Proper maintenance and testing procedures will be taught to the students enabling them to perform routine service and adjustments. The students will also be shown and taught the machine shop repair procedures for renewal of the cylinder head and valve train components. Emphasis will be put on diagnostic procedures for determining the specific problems associated with the upper cylinder head and valve train area of the diesel engine.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

- Define the purpose, construction and operation of diesel engine cylinder heads and valve trains.
- Explain the theory of operation for the intake and exhaust valves and port construction regarding the aspiration (breathing) system of the engine.
- Define the difference in operation between intake and exhaust components related to the different types of two stroke and four stroke diesel engines.
- Perform proper diagnostic procedures to determine the condition and operation of the cylinder head and valve train components.
- Perform minor tune up adjustments and service procedures to the valve train components according to manufacturers' service manuals specifications and procedures in a safe working manner.
- Safely perform the proper overhaul and renewal procedures to the cylinder head and valve train components according to manufacturers' service manuals and procedures.

III. TOPICS:

1. Diesel engine combustion theory
2. Cylinder head casting and configuations
3. Valve train components and construction and operation
4. Valve train diagnosis, maintenance and service adjustments
5. Valve train overhaul and machining principals

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

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

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	**Definition**	*Grade Point Equivalent*
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.

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 on the portal form part of this course outline.