



**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:

1. Define the purpose, construction and operation of diesel engine cylinder heads and valve trains
2. Explain the theory of operation for the intake and exhaust valves and port construction regarding the aspiration (breathing) system of the engine
3. Define the difference in operation between intake and exhaust components related to the different types of two stroke and four stroke diesel engines
4. Perform proper diagnostic procedures to determine the condition and operation of the cylinder head and valve train components
5. 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
6. 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 configurations
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:

<b>Grade</b>	<b><u>Definition</u></b>	<b><i>Grade Point Equivalent</i></b>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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:

### Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

### Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

### Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

### Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

### Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

**VII. PRIOR LEARNING ASSESSMENT:**

Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

**VIII. ADVANCE CREDIT TRANSFER:**

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.