

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Engine Systems

CODE NO. : CVC 603 **LEVEL:** 1

PROGRAM: Commercial Vehicle – Common Apprenticeship (6080)

AUTHOR: John Avery

DATE: June/08 **PREVIOUS OUTLINE DATED:**

APPROVED: “Corey Meunier”
CHAIR **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S):

HOURS/WEEK: 39 hours total during 8 week period

Copyright ©2008 The Sault College of Applied Arts & Technology
Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.
For additional information, please contact Corey Meunier, Chair
School of Technology & Skilled Trades
(705) 759-2554, Ext. 2610

I. COURSE DESCRIPTION:

Engine Systems covers the basic engine fundamentals and operation associated with the internal combustion engines of the 2 stroke and 4 stroke cycles. Students will be able to identify and describe the external and internal working components of each type of engine and perform routine maintenance and repairs associated with various types of diesel engines used in the commercial vehicle and heavy equipment market. Students will perform maintenance and tests on the cooling systems, lubrication systems, intake and exhaust systems and the fuel systems of various types and models of diesel 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 fundamentals of internal combustion engines.
2. Identify and describe the components of the diesel engine cylinder head and valve train.
3. Identify and describe the construction theory and operation of the diesel engine cylinder block assemblies
4. Define the purpose and fundamentals of the intake system the exhaust system and the accessory drive system associated with both the 4-stroke cycle diesel and the 2-stroke cycle diesel engine
5. Describe the purpose, construction and operation of the lubrication system, the types of engine oils, the molecular structure of engine oils, and the importance of the API and the SAE ratings for engine oils.
6. Describe the purpose, construction and operation of the different types of cooling systems used for diesel engines. The students will also be able to describe the different types of coolants used for liquid cooled diesel engines, the environmental concerns around such coolants and precautions that should be taken for environmental and personal safety while handling these coolants.
7. Perform disassembly and assembly procedures of the engine for the purpose of measuring the internal components of the engine block assembly according to manufacturer specifications.

8. Demonstrate proper engine lubrication service procedures for diesel engines used in commercial vehicles and equipment and perform engine oil pressure testing according to manufacturer specifications

9. Perform cooling system service on diesel engines to determine the condition and operation the coolant and the operation of the components of the cooling system according to manufacturer specifications.

III. TOPICS:

1. Engine Fundamentals
2. Diesel Cylinder Head and Valve Train
3. Diesel Engine Block Assemblies
4. Diesel Engine Intake, Exhaust and Accessory Drive Systems
5. Diesel Engine Lubrication Systems
6. Diesel Engine Coolant and Cooling Systems

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	<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.	

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.