SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	INTERNAL COMBUSTION ENGINES I		
CODE NO. :	ASM113	**SEMESTER:**	2
PROGRAM:	MOTIVE POWER FUNDAMENTALS – PARTS & COUNTER PERSONAL		
AUTHOR:	DAN TREGONNING		
DATE:	FEB. 05	**PREVIOUS OUTLINE DATED:**	JAN. 03

APPROVED:

_____ _____

DEAN **DATE**

TOTAL CREDITS:	2
PREREQUISITE(S):	ASM101 BASIC AUTOMOTIVE SKILLS
LENGTH OF COURSE:	TAUGHT IN BLOCK FORMAT

I. COURSE DESCRIPTION:

The internal combustion engine course has been designed to give the student a sound working knowledge of the construction, operating principles, testing and servicing of internal combustion engine assemblies. It will also give them the opportunity to dismantle short block assemblies for testing and inspection. Engine lubrication and cooling system construction and testing methods will also be discussed. An introduction to seals, sealants and gaskets will be given with their proper uses.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Explain the construction, operating principles, testing and disassembly of internal combustion gasoline engines.
   Potential Elements of the Performance:
   - Dismantle, inspect, test and assemble engine short block assemblies.
   - Measure cylinders to determine taper and out-of-round.
   - Explain the construction and composition of cylinder blocks, crankshafts and cylinder heads.
   - Demonstrate cylinder ridge removal and engine cleaning.
   - Measure warpage, crankshaft wear, bearing wear, camshaft wear and piston wear using manufacturers specifications and precision measuring equipment.

2. Diagnose, inspect and test engine lubrication systems.
   Potential Elements of the Performance:
   - Test engine oil pressure and compare to specifications.
   - Explain the construction and operation of crescent and gear pumps.

3. Discuss the construction and testing methods of gasoline engine cooling systems.
   Potential Elements of the Performance:
   - Compare & contrast liquid cooled versus air-cooled engines.
   - Explain the effects of pressure on the boiling point of water.
   - Describe cleaning and flushing the cooling systems taking into account proper handling and disposal of antifreeze.
   - Test coolant freeze protection.

4. Identify the proper seals, sealant and gaskets used in motive power engines.
   Potential Elements of the Performance:
   - Describe the proper seal, sealant and gasket selection process.
   - Discuss proper removal and installation practices for seals, sealant and gaskets.
   - Explain the construction and operating principles of seals, sealant and gaskets.

III. TOPICS:

1. Construction, operating principles, testing and disassembly of internal combustion engines.
2. Diagnoses, inspection and testing of lubrication systems.
3. Construction and testing of cooling systems.
4. Identification of seals, sealants and gaskets.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Automotive Technology – Text & Workbook
Pens, pencils, calculator and 3-ring binder

Shop Coat or Coveralls
CSA approved steel toe boots (high top)
CSA approved safety glasses
(these items mandatory for shop)

V. EVALUATION PROCESS/GRADING SYSTEM:

The final grade for this course will be based on the results of classroom, assignment and shop evaluation weighed as indicated:
Classroom - 60% of the final grade is comprised of term tests.
Assignment - 10% of the final grade is comprised of a number of technical reports.
Shop – 30% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude.
(Student will be given notice of test and assignment dates in advance)

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:

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 703 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.

Plagiarism:
Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. 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.

<*include any other special notes appropriate to your course*>

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean’s secretary. Students will be required to provide a transcript and course outline related to the course in question.