

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: Engine Systems

CODE NO. : MSE160 and MSE620 **SEMESTER:** ONE

PROGRAM: Motive Power Fundamentals – Small Engine Repair (5084)
Small Engine Mechanic – Level 1 Apprenticeship (6090)

AUTHOR: Gord Strachan

DATE: October 2013 **PREVIOUS OUTLINE DATED:** October 2012

APPROVED:

“Corey Meunier”

CHAIR **DATE**

TOTAL CREDITS: THREE

PREREQUISITE(S):

HOURS/WEEK:

Copyright ©2013 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
Technology & Skilled Trades
(705) 759-2554, Ext. 2610**

I. COURSE DESCRIPTION:

Upon successful completion of the reportable subject, the student is able to service and repair engines in accordance with government safety regulations, manufacturers' recommendations and specifications and approved industry standards.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Test, Service and Maintain Engine Assemblies*Potential Elements of the Performance:

- Define the essential basic information and fundamentals of engine systems and components.
- Describe the basic function, composition and construction of engine assembly components.
- Explain the basic principles of operation of engine systems and components.
- Dismantle, inspect and test basic engine short block assemblies with the prescribed service tools and equipment.
- Repair or replace engine components in accordance with the manufactures' recommendations and specifications.
- Describe manufacturers' system maintenance procedures of cylinder block dismantling and cleaning, and perform assigned operations.
- Select and use appropriate tools required to reassemble engine components.
- Reassemble engine components as established by the manufacturer maintaining all clearance limitations and specifications.
- Select the appropriate replacement engine by interpreting the manufacturers' design and specifications.
- Describe the seasonal storage procedures for engine systems and components.

2. *Test and Describe Maintenance Procedures for Lubricating Systems*Potential Elements of the Performance:

- Define the essential basic information and fundamentals of engine lubrication systems.
- Describe the basic construction features of engine lubrication systems and components.
- Explain the basic principles of operation of engine lubrication

systems.

- Inspect and test engine oil pressure and oil condition with the prescribed service tools and equipment.
- Describe manufacturers' system maintenance procedures of engine oil and filters and perform assigned operations.

3. *Test and Describe Maintenance Procedures for Cooling Systems*

Potential Elements of the Performance:

- Define the essential basic information, and fundamentals of engine cooling systems.
- Describe the basic construction features of engine cooling systems and components.
- Explain the basic principles of operation of engine cooling systems.
- Inspect and test engine cooling systems and components.

III. TOPICS:

1. Engine Assemblies
2. Lubrication Systems
3. Cooling Systems

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**Title:** Understanding the Outboard Motor**Edition:** 3rd**Author:** Stagner**Publisher:** Pearson Education**Title:** Boat-owner's Mechanical and Electrical Manual**Edition:** 3rd**Author:** Calder**Publisher:** McGraw Hill**Title:** Small Gas Engines**Edition:** 10th**Author:** Roth**Publisher:** Goodheart-Willcox**Title:** Small Gas Engines (workbook)**Edition:** 10th**Author:** Roth**Publisher:** Goodheart-Willcox

CSA Certified 6 inch Leather Safety Boots
CSA Certified & Impact Resistant Safety Glasses
Coveralls (non-flammable material - i.e. cotton)
Shop Coat (optional)

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory	40%
Application Experiences	30%
Final Assessment	30%

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
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	

U	placement or non-graded subject area. 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.

Attendance is mandatory except with a valid excuse. If late you will be marked absent for the whole hour. For every unexcused absence you will be deducted 1% per class period. Previous notification or a call the day of absence is required for excusal.

If you miss a test with an unexcused absence you will not be allowed to write that test.

If a class is missed or going to be missed it is your responsibility to notify your instructor and make arrangements for handouts and notes taken while you were away.

CSA approved safety glasses and safety boots must be worn in the shop at all times. Please have safety boots and safety glasses available because you may not have a lot of warning when going into the shop.

CELL PHONES OR PAGERS MUST BE TURNED OFF IN ANY CLASS.

VII. COURSE OUTLINE ADDENDUM:

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