

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**SAULT  
COLLEGE**

**COURSE OUTLINE**

**COURSE TITLE:** Propulsion Systems

**CODE NO. :** MSE330 and MSE832      **SEMESTER:** TWO

**PROGRAM:** Motive Power Fundamentals – Small Engine Repair (5084)  
Marine Engine Mechanic – Level 3 Apprenticeship (6089)

**AUTHOR:** Gord Strachan

**DATE:** March      **PREVIOUS OUTLINE**      March  
2015      **DATED:**      2014

**APPROVED:**

*“Corey Meunier”*

**CHAIR**      **DATE**

**TOTAL CREDITS:** FOUR

**PREREQUISITE(S):**

**HOURS/WEEK:**

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**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 perform propulsion system testing procedures and recommend repairs in accordance with government safety regulations, manufacturers' recommendations and specification 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. *Recommend Repair for Outboard Drive Systems.*****Potential Elements of the Performance:**

- Identify the essential fundamentals of outboard drive systems.
- Describe the construction features and applications of outboard drive system components.
- Explain the principles of operation of outboard drive systems.
- Describe testing and diagnostic procedures on outboard drive systems.
- Recommend maintenance, repair and replacement procedures on outboard drive systems.

**2. *Perform Stern Drive System Testing and Repair.*****Potential Elements of the Performance:**

- Identify the essential fundamentals of stern drive systems.
- Describe the construction features and applications of stern drive system components.
- Explain the principles of operation of stern drive systems.
- Perform testing and diagnostic procedures on stern drive systems.
- Perform maintenance, repair and replacement procedures on stern drive systems.

**3. *Perform Inboard Drive System testing and Repair.*****Potential Elements of the Performance:**

- Identify the essential fundamentals of inboard drive systems.
- Describe the construction features and applications of inboard drive system components.
- Explain the principles of operation of inboard drive systems.
- Perform testing and diagnostic procedures on inboard drive systems.
- Perform maintenance, repair and replacement procedures on inboard drive systems.

**4. Describe Jet Drive System Testing and Repair.****Potential Elements of the Performance:**

- Identify the essential fundamentals of jet drive systems.
- Describe the construction features, applications and function of jet drive system components.
- Describe testing and maintenance procedures on jet drive systems.

**5. Describe Propeller System Testing and Repair.****Potential Elements of the Performance:**

- Identify the essential fundamentals of propeller systems.
- Describe the construction features, application and function of propeller system components.
- Describe testing and maintenance procedures on propeller systems.

**6. Perform Hydraulic Tilt, Trim and Steering System Testing and Repairs.****Potential Elements of the Performance:**

- Identify the essential fundamentals of hydraulic tilt and trim systems.
- Describe the construction features, applications and function of hydraulic tilt and trim system components.
- Explain the operating principles of hydraulic tilt and trim systems.
- Perform testing and maintenance procedures on hydraulic tilt and trim systems.

**III. TOPICS:**

1. Outboard Drive Systems
2. Stern Drive Systems
3. Inboard Drive Systems
4. Jet Drive Systems
5. Propeller Systems
6. Hydraulic Tilt, Trim and Steering 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:** Safe Boating Guide

Transport Canada

Free Publication

**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                  | 15% |
| Application Experiences | 55% |
| Final Assessment        | 30% |

The following semester grades will be assigned to students:

| <b>Grade</b> | <b><u>Definition</u></b>  | <i>Grade Point<br/>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 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.

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.