Department of Motorcycle & Recreational Powersports
PRE-EMPLOYMENT OUTDOOR POWER EQUIPMENT PROGRAM
COURSE OUTLINE – WINTER, SEMESTER 2

SM 250 Marine Outboard Theory

INSTRUCTOR: Les Ashton **PHONE:** 780.835.6687
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OFFICE HOURS: Monday through Friday.
9:00 a.m. – 5:00 p.m.

PREREQUISITE(S)/COREQUISITE: None.

REQUIRED TEXT/RESOURCE MATERIALS:

Textbooks:

Bombardier Recreational Product's Guide to Service Fundamentals and Principles
Bombardier *Used in SM 150, 200, 250*

Understanding the Outboard Motor Stagner

Supplied Textbooks:

Marine Corrosion, Marine Propping, Safe Boating Guide

Other Required Supplies:

- 3-ring binder(s)
- calculator (basic)
- pencils
- eraser
- loose leaf paper

CALENDAR DESCRIPTION: Marine theory pertains to outboard engines, both two and four stroke as well as personal water craft (PWC). Topics include; boating terminology, safety, power-head design and overhaul, gear cases, EFI systems, engine cooling systems, fuel systems, lubrication systems, and diagnostic procedures used on marine electrical circuits and components. The student will also have the opportunity to evaluate engine performance by using a dynamometer. Boat trailer set-up, trailer brakes, and rigging procedures will also be discussed.

Delivery Option – Fairview Campus Only

CREDIT/CONTACT HOURS: 4.5 credits; 12.5 hours per week; 8 weeks; 80 hours.

DELIVERY MODE(S): Instructor led classroom theory.

OBJECTIVES: The Outdoor Power Equipment Technician program has been developed to provide students with entry level skills in the marine equipment technologies.

TRANSFERABILITY: None.

GRADING CRITERIA: Students must complete all required courses with a grade point average of 2.0 or higher; in order to receive a Certificate of Achievement in Pre-Employment Outdoor Power Equipment Technician. Proof of completion of *Construction Safety Training System (*CSTC).

Absence for tests will result in a score of zero.

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A+	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A-	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B+	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B-	**2.7**	**70 – 72**	
C+	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**63 – 66**	
C-	**1.7**	**60 – 62**	**FAIL**
D+	**1.3**	**55 – 59**	
D	**1.0**	**50 – 54**	
F	**0.0**	**0 – 49**	
WF	**0.0**	**0**	**FAIL, withdrawal after deadline**

EVALUATIONS:

Areas of Evaluation	Percentage of Total Course Mark
Final Exam	40%
Unit Tests	60%

STUDENT RESPONSIBILITIES:

Please refer to the Student Rights and Responsibilities policy in the Grande Prairie Regional College Calendar or at www.gprc.ab.ca/downloads/documents/StudentRightsandResponsibilities.pdf.

ATTENDANCE REQUIREMENTS:

In addition, attendance will be graded as follows:

- Unavoidable absences should be relayed to the instructor prior to or immediately after the day in concern. If the instructors know the situation, it is easier to be compassionate to individual needs.
- Note: Attendance is monitored for both shop and theory.
- Student attendance is recorded by the hour.
- If a student is late by 15 minutes = one hour missed.
- Students who are chronically late must meet with the Instructor or the Chair of the program.
- Chronic lateness will not be permitted.
- If six hours are missed the student must meet with the Instructor. A written and signed record of the meeting will be completed. A copy will be given to the student and the instructor will place a copy on the student's file.
- If 12 hours are missed the student must meet with the Chair of the program. A written and signed record of the meeting will be completed. A copy will be given to the student, the instructor and the Chair.
- If 18 hours are missed the student must meet with the Chair of the program again. Disciplinary action will be taken. Such disciplinary action may include, but is not limited to, a penalty assessed to the student's marks, placed on probation, or termination from the program.
- Absence for tests will result in a score of zero.

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to www.gprc.ab.ca/downloads/documents/Student%20Misconduct%20Plagiarism%20and%20Cheating.pdf regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

COURSE SCHEDULE/TENTATIVE TIMELINE:

Week 1 Familiarization with nautical terminology and safety products and procedures. Trailer rigging including electric brakes, wiring, break away. 2-stroke power head design types. Model identification. Parts and service look up.

Week 2 Power head overhaul. Plain bearing inspection and insert selection. Financial aspects of business operation including types of expenses, technician efficiency rating, interdepartmental charges. Dealing with customers and writing work orders.

Week 3 Gear cases (lower units) disassembly and service. Jet drive inspection and service. Cooling system component inspection.

Week 4 Magneto powered ignition systems including breaker, maker, CDI, solid state types. Battery powered ignition including breaker, CDI, electronic systems. ECU controlled systems. Trouble shooting and servicing all types.

Week 5 Fuel and lubrication systems as used with outboard engines and PWC. EFI and DFI theory of operation and trouble shooting.

Week 6 Starting systems both manual & electric including safety interlocks. Electric starter trouble shooting. Batteries construction, maintenance, testing, battery isolators. Charging systems types and diagnostics.

Week 7 Tune up procedure. Marine dynamometer usage. Propping theory and selection. Rigging including installation of accessories.

Week 8 Troubleshoot power head running problems. Winterize and review.