

Course Syllabus

Course Name: Marine Propulsion Service and Maintenance

Course Number: MARR 42

Course Credits and Hours: 3 credits; 90 hours lecture/lab

Prerequisites: MARR 22

Course Description: This course provides instruction in the care, maintenance, and service of outboard, gasoline sterndrive propulsion systems. Basic diesel service will be covered. The various steering systems (hydraulic, cable, rotary, push pull) will be explained and demonstrated along with maintenance procedures.

Course Objectives:

Upon successful completion of this course, the student will be able to:

1. Understand the basic operational principles of outboard, sterndrive, and diesel engines.
2. Perform basic service and troubleshooting on outboard engines
3. Perform basic service on sterndrives and diesels
4. Identify different steering systems
5. Understand the operational principals of the different steering systems and troubleshoot them
6. Perform basic maintenance and service on the steering systems

Course Outline:

I. BASIC OPERATIONAL PRINCIPALS OF MARINE ENGINES

- A. 2-Cycle Gas Outboards
- B. 4-Cycle Gas
 1. Inboard
 2. Outboard
- C. Diesel
 3. 2-Cycle
 4. 4-Cycle
- C. Sterndrive

II. OUTBOARD ENGINE SERVICE

- A. Maintenance and Servicing
- B. Troubleshooting
 1. Common problems
 2. Remedies

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III. INBOARD ENGINE SERVICE

- A. Diesel
 - 1. Bleeding fuel Lines
 - 2. Troubleshooting
- B. Gas
 - 1. Blower
 - 2. Spark Arrestors
 - 3. Troubleshooting
- C. Cooling Systems
 - 1. Raw Water Cooling
 - 2. Closed Coolant Cooling
 - a. Heat exchanger
 - b. Keel Cooler
- D. Exhaust Systems
 - 1. Dry Exhaust
 - 2. Wet Exhaust
 - a. Mufflers
 - b. Exhaust Routing

IV. STERNDRIVES

- A. Maintenance
- B. Troubleshooting

V. STEERING SYSTEMS

- A. Overview
 - 1. Pull-Pull
 - 2. Push-Pull
 - 3. Hydraulic
 - 4. Rack and Pinoin
- B. Maintenance
- C. Troubleshooting

Evaluation:

Standard Alpha System:

- A 94-100
- B 88- 93
- C 80- 87
- D 70- 80
- F below 70

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Evaluation by percentages:

40% - Hands on projects and exercises; graded for accuracy, neatness and attention to detail.

40% - Written tests; given to determine understanding of principals

20% - METC's Work Habits Evaluation*

*The evaluation addresses behavior such as "Does the student report to class on time and prepared? Does the student use lab time wisely? Does the student cooperate with the instructor and team members? Is METC policy followed? Does the student participate in class discussions?"

Many handouts will be issued to you throughout your career at the METC. It is imperative that you keep a three-ring binder with labeled dividers. During some written tests you will be allowed to refer to your notes. You will also find it beneficial to refer to your notebook while executing projects. Your notebook will directly effect your written and "hands on" project scores. Your notebooks will periodically be turned in and evaluated.

Prompt attendance is vital to your success. Many "hands-on" projects and demonstrations simply can not be repeated. The table below demonstrates how absences and tardiness will limit how high a grade you will be eligible to receive for this course.

If you miss:	You are eligible for a(n)
5 hours or less	A
10 hours or less	B
15 hours or less	C
20 hours or less	D
More than 20 hours	F

Each Tardy will equal 1/2 Hour Absent. This includes being late to returning to class after a designated break.

Please call to inform if you are going to be absent. Many of our projects are tackled as a team. We need to know if a team member is going to be absent. The answering machine is on phone # **832-3682**.

If you do not call to notify of your absence and there is a test, and you are granted permission to take a make-up test, a 14 point (based on 100 pt. scale) penalty can be deducted from your make-up score. Be advised that any make-up exam administered may be different in format from the original exam, and may include oral examination.

Textbooks: *Boatowner's Mechanical and Electrical Manual*, Nigel Calder, International Marine/McGraw/Hill

Engine manuals supplied by school.