

Course Syllabus

Course Name: Marine Plumbing

Course Number: VESL 53

Course Credits and Hours: 2 credits; 60 hours lecture/lab

Prerequisites: None

Course Description: This course provides classroom and hands-on instruction in marine plumbing. Upon successful completion, the student will possess the knowledge and skills necessary to design and install a sanitation system and fresh water system per American Boat and Yacht Council (ABYC), United States Coast Guard (USCG), Environmental Protection Agency (EPA) and industry standards.

Course Objectives:

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

1. State Federal marine wastewater discharge regulations.
2. Choose the proper plumbing components for marine (vs. residential) plumbing installations. The components emphasized are sea cocks, thru-hulls, hose and hose clamps, pipe and pipe connections, valves, pumps, anti-siphon devices and tanks
3. Install a marine sanitation system including thru-hulls, hose, anti-siphon devices, valves, heads, and holding tanks to USCG, EPA, and ABYC guidelines.
4. Troubleshoot a marine sanitation system
5. Install a potable water system with manual and automatic pumps; check valves and accumulator tanks.
6. Troubleshoot a pressurized water system.
7. Design a composite water or holding tank
8. Install a Type III sanitation device that treats waste electro-chemically for legal overboard discharge within three miles of shore
9. Understand the principals and parts used in an inboard engine installation, both intake and exhaust

Course Outline:

I. DISCHARGE REGULATIONS MARINE SANITATION DEVICE (MSD)

- A. Type I
- B. Type II
- C. Type III

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II. PLUMBING COMPONENTS

- A. Sea cocks
- B. Thru-Hulls
- C. Hose
 - 1. Type
 - 2. Hose Clamps
- D. Pipe and Connections
- E. Pumps
- F. Tanks
 - 1. Holding
 - 2. Fresh Water
 - a. Design and Construction
- G. Anti-Siphon devices
- H. Pressure Water System
 - 1. Maintenance
 - 2. Troubleshooting

III. TROUBLESHOOTING A MARINE SANITATION DEVICE

- A. Overview of System
- B. The “Joker” Valve
- C. Backflow

IV. INSTALLING A POTABLE WATER SYSTEM-MANUAL/PRESSURIZED

- A. Manual and Automatic Pump(s)
- B. Check Valves
- C. Accumulator Tank(s)
- D. Fill Demand and Vent Hoses
- E. Service and Maintenance

V. INSTALLATION OF A TYPE III MSD

- A. Legal Aspects
- B. Power Drain
- C. Service and Maintenance

VI. INTAKE AND EXHAUST WATER SYSTEMS FOR INBOARD ENGINES

- A. Components
- B. Regulations

Evaluation:

Standard Alpha System:

- A 94-100
- B 88- 93
- C 80- 87

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D 70- 80
F below 70

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