

## Talking Points 4 Marine Systems Curriculum.

- - The United States Marine Safety Institute (USMSI) is a public 501c3 Non-Profit Organization committed to emergency and disaster response.
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  - The USMSI supports communities impacted by natural disasters with relief supplies for quick deployment in the immediate wake of a disaster.
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  - Our supply chain and operations teams work around the clock to move necessary product and equipment to areas hit the hardest in the path of a disaster. Our warehouse, however, has become depleted in this unending COVID pandemic.
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  - We are helping prepare skilled people for opportunities, but are finding ourselves back into a corner. The USMSI has invested more than \$390,000 from our lines of credit and emergency paymaster fund to support natural disaster preparedness, response and long-term recovery efforts in 2019 to date, July 2022. In early 2021, the USMSI was compelled to take a \$53,000 SBA loan to assist and support our volunteers impacted by COVID and natural disasters.
- **Apprenticeship Program**

From 1999-2010, under the United States Search and Rescue (USSAR) and later forming the USMSI in 2002, we committed to educating young people ages 16-28 in a multitude of skilled trades under our

Marine Systems Curriculum (MSC). In 1997, I was asked to assist in the design of Aluminum Chambered Boats (ACB's) first line of 26' vessels geared towards fire, law enforcement, rescue, military and commercial fishing vessels. It was the ultimate utilitarian vessel. I accepted the offer to assist President Larry Wieber for 8 weeks at no charge providing that our organization would be the sole dealer in Florida and the military sales representative to all federal, city and state agencies East or West from 200 miles of the East Coast. We began to set up a training and education center in Fort Myers to help these apprentice's find careers in many industries in many states and countries through our Apprenticeship Program (AP).

\*\*\*With hundreds of open roles in the trades nationally, we can't tackle this work alone. We are helping prepare skilled people for opportunities, but we now find ourselves backed into a corner. During that time the USMSI introduced more than 900 to the skilled trades and certified more than 320.

That all came to a screeching halt in 2010 when Larry Wieber bilked the company and investors for over \$16 million dollars forcing ACB's to file bankruptcy.

The USMSI is now launching several new profit initiatives to fund our non-profit programs with the same idea in mind and hoping to land Stabicraft

Boats of NZ as our lead initiative if they open up a manufacturing plant in Port Angeles, WA as planned (updates to follow). With taking on a new vessel line as we had with ACB's, it re-creates the availability of dozens of skilled trades without re-inventing the wheel. We have the Marine Systems Curriculum (MSC) already written up and a great deal more. Besides the basics of mounting engines, engine maintenance and repair in-house and mobile dock services, we will add quite a few programs as technology has vastly changed this past decade.

The below list of MSC, including an addition of Online products that we have tested for 35 years, including entry-level certifications in advanced training and including a networking platform with licensed captains training new personnel in vessel operations, rescue and recovery (similar to Towboat U.S.) and reef deployment, adds a plethora of available programs to our offerings. USMSI students will have even more opportunity to pursue their career journey in these trades from start to finish and make a career out of their desired profession. Here are some of the options under the MSC programs:

## MARINE SYSTEMS CURRICULUM

### SHOP SAFETY AND TOOL USE

Students learn safety standards and safe operating procedures for stationary and portable hand and power tools as well as appropriate federal and state standards, personal protective equipment, machine tool safety, hazardous waste, and fire prevention procedures.

### ELECTRICAL FUNDAMENTALS, BASIC & ADVANCED INSTALLATION AND TROUBLESHOOTING

This course instructs fundamental principles for circuit and electrical equipment design including use of electrical meters and test equipment to troubleshoot common electrical circuit problems and component fault identification. Additionally, this course covers circuit layout and design, equipment installations in accordance with the US Code of Federal Regulations (CFR) and more advanced topics covered in the applicable American Boat and Yacht Council (ABYC) Electrical Standards.

### PIPING AND PLUMBING / POTABLE WATER SYSTEMS

This course teaches the installation techniques of various onboard plumbing systems, including standard maintenance, winterizing and re-commissioning, seacocks, thru-hull installation and connections, hose and fitting types, drain plugs and potable water systems.

## ON BOARD TANKAGE (FUEL, POTABLE WATER, WASTE)

Students learn the standards and industry practices that apply to tankage systems, design and installation requirements.

## MARINE SANITATION DEVICES (MSD)

MSD covers the federal and local regulations for waste water systems and specific characteristics of the three general types of sanitation systems.

Course work includes commissioning and decommissioning, maintenance, troubleshooting, diagnostics, and repair.

## MARINE PUMPS

Primary pump types including impeller, centrifugal, displacement and diaphragm are learned. Course work includes determining the most appropriate pump type for a given application, pump performance and effective service life, design and installation of various pump systems, and manufacturer specific recommendations.

## LIQUIFIED PETROLEUM GAS (LPG) AND COMPRESSED NATURAL GAS SYSTEMS (CNG)

This course covers the installation and service of onboard gas systems used for cooking, water heating and cabin heat as well as fuel storage, system design, and appliance selection.

Fire Protection Systems: United States Coast Guard (USCG) requirements for onboard fire extinguishing equipment for recreational boats are examined. Course work covers portable, fixed, manually actuated, and automatic systems, fire classifications, differences in extinguishing agents, manufacturer specific recommendations, and system capacity calculations and design.

### FUEL SYSTEMS – GAS & DIESEL

Students learn the design, installation, and maintenance procedures for fuel systems as dictated by both the CFR and ABYC standards. The course outlines the requirements for tank design, location, and installation as well as proper plumbing for fuel fill and vent systems.

### STEERING SYSTEMS

Students learn a variety of steering system types for both power and sailing craft. Course work covers selection, installation, and service of marine steering systems, both mechanical and hydraulic. Since many of the systems are proprietary in design, lessons follow specific recommendations from vendors such as Edson, Teleflex and Vetus.

### DIESEL ENGINES

In this course, students master the fundamental principles and operational needs of marine diesel engines. Course work includes the primary needs of a diesel engine; routine maintenance tasks such as

commissioning and decommissioning; fuel and lubrication system service, cooling system maintenance and service, and troubleshooting and preliminary diagnostics. Mechanical and electronic diesel engine fuel injection systems and engine drive systems are studied in depth. Shop work covers assembly and disassembly procedures on marine gear assemblies.

### GASOLINE ENGINE MAINTENANCE, REPAIR AND OVERHAUL

Gasoline inboard and inboard /outboard engines are studied in theory and practice including maintenance and repair procedures, commissioning and decommissioning, basic engine needs such as fuel, air, compression and exhaust for both carbureted and fuel-injected engines, routine tuning procedures and use of electronic scanning equipment and proprietary laptop-based software programs to perform diagnostic procedures on new engine electronic fuel injection systems.

### INBOARD/OUTBOARD AND SAILDRIVE MAINTENANCE & REPAIR

Students learn removal and installation techniques, routine maintenance, disassembly and overhaul of inboard/outboard and Saildrive gear assemblies from Yanmar, Mercury and Volvo Penta.

## AIR CONDITIONING AND REFRIGERATION SYSTEMS

This course covers the basic physics of refrigeration systems, principles of operation, cooling components, essential selection, sizing and systems maintenance methods and procedures, and environmental considerations. Lab work includes system problem diagnosis, refrigerant recovery, system evacuation and recharge procedures and leak detection.

## MARINE ELECTRONICS INSTALLATION AND TROUBLESHOOTING

Types and categories of equipment used in onboard electronic systems are studied, including communications and navigation equipment, autopilot, and networked monitoring systems. Course work includes installation, ergonomics, weatherproofing, grounding and antenna mountings, FCC requirements, and NMEA (National Marine Electronics Association) installation standards.

## PROJECT MANAGEMENT

This area of study teaches the basic principles and skills of estimation, costing, budgeting and contracting for electrical systems and power systems installations.

## EXTERNSHIP

All students complete an externship, which is facilitated through Career Development. Through the externship opportunity, students apply the skills they've acquired in the shop to the workplace while gaining valuable industry, resume-building, and hands-on experience:

- Resume writing
- Industry research
- Interviewing & professional communication
- Application of craftsmanship & technical skills in an industry-specific business environment
- Relationship building with potential full-time employers

## Externship Program

Every USMSI program of study includes an industry externship in which students apply the skills they have learned to a real-world industry position prior to graduation from their program. The USMSI has created partnerships with many of the leading marine and manufacturing companies in the country to offer these opportunities for students to gain valuable, marketable experience.

The externship experience provides students with the opportunity to demonstrate both the hands-on and professional career skills they have learned

while offering employers the opportunity to consider

students for full-time positions post-graduation. The externship is an exceptional resume-building opportunity.

### **Other Info: Veterans Program**

In 1999, The USMSI and fighter pilot U.S. Army (ret.) Capt. Robert (Bob) Roylance (RIP), launched our trades training program for underserved youth and military veterans, The T4J (Training 4 Jobs) Skills Program.

- 4-16 week Training-4-Jobs program at no cost
- Graduates gain pre-apprenticeship certification training (PACT) and OSHA 10
- Programs are near or adjacent to U.S. military bases for obvious reasons.

### **Youth Programs**

The USMSI expanded T4J program;

- programs provided at no cost to students
- pre-apprenticeship certification training (PACT) curriculum offered to 16 to 27 year olds
- Programs taught in more than 50 schools across 11 states

### **Mentored On-the-Job Construction Education**

In 2016, The USMSI partnered with 11 General Contractors (GC's) in 6 states (FL, CA, MN, ME, WY, OR) to introduce the 'Ready-to-Build'—advanced level trades training.

The USMSI and partnering Florida-based corporations collaborated to introduce the Aquaculture Center for Training (ACT) .

- The program offers high-quality instructors, professional skills classes, career development coaching, wrap-around services, and work-based apprenticeships and internships.
- The USMSI's Skilled Trades Programs provide training in vessel building and maintenance, engine repair, carpentry, electrical, plumbing, welding, search, rescue and recovery.