



OUTBOARD TRAINING (OB Series)

OB-302 Outboard 4-Stroke Systems Technology

This course is designed to teach the basics of four-cycle gasoline outboard theory as well as the terminology, measuring instruments, special tools and diagnostic software necessary for work on these engines. Extensive hands-on labs will be used during this course. This course is presented by **Mark Kramer and Sean Hill**. Mark Kramer is a master technician for diesel, automotive and marine with more than 20 years experience. His extensive experience covers all combustion engines and electrical systems, as well as DFI, EFI, engine diagnostics, and engine rebuilding for high performance engines. A member of the Deep South Racing Assoc., Mark was High Point Champ, High Point Runner Up and Outstanding Sportsman from 2000-2005. Mark also teaches classes at the CDI Electronics ignition school. **Sean Hill** has over 30 years experience in electronics and more than 20 years in the boating industry. He's a former EFI engineer for CDI Electronics and has taught MCTINA classes as well as teaching courses at the CDI Electronics ignition school.

OB-E05 Outboard 2-Stroke – Mercury Optimax / Yamaha HPDI / Evinrude E-TEC

This course will sharpen your existing maintenance and troubleshooting skills on Mercury Optimax, Yamaha HPDI and Evinrude E-TEC direct injected 2-stroke engines. Systems covered include engine specifications, theory of operation, diagnosing of the air/fuel delivery systems, operating ranges, engine component locations, maintenance/service procedures, special tools, troubleshooting strategies, fault codes, break-in procedures, common failures, service bulletins, as well as do's and don'ts. Special attention will be placed on the electrical and fuel systems of each engine, as well as the diagnostics unique to each brand. The instructors for this course is **Mark Kramer and Sean Hill**, Mark Kramer is a master technician for diesel, automotive and marine with more than 20 years experience. His extensive experience covers all combustion engines and electrical systems, as well as DFI, EFI, engine diagnostics, and engine rebuilding for high performance engines. A member of the Deep South Racing Assoc., Mark was High Point Champ, High Point Runner Up and Outstanding Sportsman from 2000-2005. Mark also teaches classes at the CDI Electronics ignition school. Sean Hill has over 30 years experience in electronics and more than 20 years in the boating industry. He's a former EFI engineer for CDI Electronics and has taught MCTINA classes as well as teaching courses at the CDI Electronics ignition school.

INBOARD TRAINING (IO Series)

IO-201 Advanced Inboard Electronic Fuel Injection Technology

This course is for the advanced technician who has had training in EFI or for the person who wants to refresh his/her skills. The course will briefly cover Mercury Marine's EFI history with in-depth coverage of the components and their potential failures. It will cover the fuel system, ignition system, and the tools needed to check for proper operation. The MEFI (marine electronic fuel injection) and Motorola 555 systems will be covered. Also in the course, students will learn general maintenance and storage procedures. Students will work on running engines. You will complete troubleshooting tasks using the proper testing equipment. Students will learn the proper processes to effectively diagnose EFI running problems. The Instructor for this course is **Bob Hoard**, former Marine Instructor at Oakland Tech Center in Pontiac, MI. and former Mercury and Mercruiser instructor

IO-202 Marine M.P.I. Sterndrive and Inboard 2001 to Current Systems

This class covers Mercruiser ECM and PCM 555 systems for a better understanding of how to properly diagnose using scan tools and other diagnostic equipment. Also other related components will be covered including ignition systems, fuel systems and sensors to help the technician with testing methods for proper repairs the first time, along with proper maintenance. Other topics covered will be in-depth system failures including ECM failures and how to determine what is the best repair for the boat owner, plus how to prevent further failures. Other in-depth topics will be covered including aftermarket stand alone EFI systems, plus fuel injectors, testing and flow testing do's and don'ts. The course will also show how a technician can pin point whether the problem is with the fuel injectors themselves. The last part of the class will discuss the current marine fuel injection systems and where it is heading in the future. The instructor for the course is **John Mosetti**, owner of Boats Unlimited, Manufacturing Lavey Craft Custom Performance Boats and Member of AERA Engine Builders Association.

IO-E05 Installation and Service Bravo, Alpha Drives and Transom Assembles

This course will cover the installation and servicing of Bravo 1,2,3 and its transoms assemble. The course will also highlight the service of the Alpha drive. With the Alpha drive its important to understand that although the Mercruiser Alpha drive can be replaced with aftermarket drives for less money, they too will need servicing that require the same service tools. During this course the instructor will concentrate on the problem areas that are typically found in the field, and he will discuss the service bulletins that pertain to correcting these problems. This course will also cover the proper installation and service of the transom assemblies. Students will also learn shifting, cooling and corrosion problems associated with the drive system, along with important preventive maintenance. The Instructor for this course is **Bob Hoard**, former Marine Instructor at Oakland Tech Center in Pontiac, MI. and former Mercury and Mercruiser instructor

IO-E06 Marine Catalyst Systems

This class will cover gasoline marine catalyst systems and all the related systems. Topics covered will start out with the benefits of having a catalyst system in marine applications and the problems that can arise with marine catalyst systems. System components will be covered in-depth, along with proper maintenance, winterization and summerization. Also covered will be in-depth diagnostics along with current scan tools and testing equipment to help the technician understand how to perform proper repairs. This class is for technicians who never had any Catalyst training for OEM marine applications or who had brief overviews and very basic training about marine catalyst engines. This course would be ideal if you plan on working on these systems, or if you have seen a few marine catalyst engines per year, and you want to further your knowledge and grow this end of your service work. The instructor for the class is **John Mosetti**, see above for bio.

TECHNICAL SKILL SET TRAINING (SS Series)

SS-103 CAN Bus Systems Technology (Prerequisite Course)

Today's hottest technology for both engine and boat system control is CAN Bus technology. CAN Bus is the new central nervous system (communication network) for modern marine systems and is used by virtually all engine manufacturers and most production boat builders. This technology allows the operator to observe and control the propulsion system, electronic navigation, and other systems such as fuel and water tanks. As complex as it sounds, the built-in diagnostics simplify the use and diagnostics of the CAN Bus system. This course will explain the architecture of the CAN Bus, how it works and the various versions used today. Not all CAN Bus systems are the same or compatible. Hands-on experience with a simplified CAN Bus system is used. **Will Smith** former WyoTech instructor now with Marine Engineering Group LLC is the instructor for this class. Today's hottest technology for both engine and boat system control is CAN Bus technology. CAN Bus is the new central nervous system (communication network) for modern marine systems and is used by virtually all engine manufacturers and most production boat builders. This technology allows the operator to observe and control the propulsion system, electronic navigation, and other systems such as fuel and water tanks. As complex as it sounds, the built-in diagnostics simplify the use and diagnostics of the CAN Bus system. This course will explain the architecture of the

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NMSE '18 Training Courses

ROOM	TUESDAY 1-23-18	WEDNESDAY 1-24-18	THURSDAY 1-25-18	FRIDAY 1-26-18
1	Marine M.P.I. for Sterndrive & Inboard 2001 to Current	Installation and Service Bravo Alpha Drives and Transom Assemblies	Outboard 4-Stroke Technology	Marine M.P.I. for Sterndrive & Inboard 2001 to Current
2	Advanced Inboard Electronic Fuel Injection Technology	Marine Catalyst Systems	Advanced Inboard Electronic Fuel Injection Technology	Installation and Service Bravo Alpha Drives and Transom Assemblies
3	Outboard 4-Stroke Technology	Outboard 2-Stroke Technology Optimax / HPDI / E-TEC	Marine Catalyst Systems	Outboard 2-Stroke Technology Optimax / HPDI / E-TEC
4	CAN bus Technology	CAN bus Technology	CAN bus Technology	CAN bus Technology

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