

Campus:

Ashland



Program Overview

The student will be prepared for a career in the marina and marine service and repair business. This three-semester program includes instruction in marine engine service, operation, diagnosis, repair, equipment installation, maintenance, and rigging new boats. The student will work on two- and four-cycle gasoline engines, drive systems, transmissions, fiberglass boat hulls, electrical systems, and consumer-supplied products.

Special Features

- Unique in the state of Wisconsin
- Service school options
- 6,000-square-foot up-to-date lab
- EFI and direct injection engines
- American Boat and Yacht Council (ABYC)
- Association of Marine Technicians (AMTECH)
- Off-site training at local marinas and dealerships
- Actual service experience through community-supplied projects
- Students may enter the program either fall or spring semester

Admission Requirements

Students in this program must:

- Complete application form and submit with fee (fee waiver may apply if previously submitted)
- Complete Accuplacer entrance assessment to determine placement (waiver may apply with acceptable alternative test scores and/or postsecondary degree completion)
- Complete admissions interview with a WITC counselor (above requirements should be completed prior to interview)

Student Profile

Marine Repair Technician students should be able to:

- Demonstrate mechanical aptitude
- Demonstrate physical agility through fine and gross motor skills
- Work in a service environment
- Differentiate between colors

Preparation for Admission

Students should strive to reach a comfort level in the following courses or skills:

- English/Communications
- Mathematics
- Small Engine or Auto Mechanics
- Basic computer skills

Program Outcomes

Employers will expect the Marine Repair Technician graduate to be able to:

- Service, operate, diagnose, and repair outboard motors
- Service, operate, diagnose, and repair sterndrive and inboard engines
- Service and repair marine transmissions and sterndrive units
- Communicate technical information and data orally, in writing, mathematically, and visually
- Demonstrate safe and proper equipment and tool use
- Act responsibly in the workplace
- Demonstrate good customer service skills
- Use service materials
- Repair minor damage to fiberglass boat hulls

Collegewide outcomes and indicators will also be addressed to develop personal awareness, career effectiveness, and professionalism. See page 5 for a list of collegewide outcomes and indicators.

Career Outlook

Graduates of the Marine Repair Technician program find great demand for their skills. Typical positions available after graduation include:

- Inboard Engine Technician
- Outboard Motor Technician
- Boat Rigging Technician
- Electronic Equipment Installation Technician
- Marine Sales Representative
- Marine Service Technician
- Marine Service Supervisor

Curriculum

Number	Course Title	Credits
Occupational Specific Courses		
31461314	Outboard Motors	5
31461315	Marine Electricity/Electronics	2
31461316	Marine Welding [▲]	2
31461317	Marine Engine Systems [▲]	5
31461318	Outboard Gear Cases/Rigging [▲]	5
31461319	Sterndrive Systems [▲]	5
31461320	Fiberglass Boat Hull Repair/Boating Safety [▲]	2
31461322	Inboard Engines	5
31461323	Inboard Transmission Systems [▲]	2
31461325	Marine Diesel	1
31461326	Marine Engine Computer Control Systems [▲]	<u>4</u>
		38
Occupational Supportive/General Studies Courses [♣]		
32801361	Applied Communications 1	2
32804373	Math 373	2
32806351	Applied Science	<u>2</u>
		6
	PROGRAM REQUIREMENTS	44

- ▲ Requires a prerequisite and/or corequisite that must be completed with a grade point of 2.0 or better.
- ♣ See page 40 for General Studies course descriptions.

Course Descriptions

(See page 40 for General Studies course descriptions)

31461314

Outboard Motors - Credits: 5

This course provides an introduction to the marine industry. Students will learn how to work safely in a shop environment and use service tools and information. Students will learn the theory of how two- and four-stroke outboard motors operate. This course will teach students how to repair, maintain, and rebuild two-stroke and four-stroke outboard motors. Also, students will learn about fuel, ignition, manual and electric starting systems, and charging systems. Small gearcase operation and repair are also covered.

31461315

Marine Electricity/Electronics - Credits: 2

This course is designed to teach the theory of DC electricity. Students will learn how to read electrical schematics and build and repair electrical circuits found in typical boats. The student will be able to diagnose, troubleshoot, and correctly use test equipment to repair boat and engine electrical problems. Emphasis is placed on safety, tools, proper use of test equipment, specifications, and schematics. Practical applications will include real world shop experiences that will reinforce learned electrical concepts.

31461316

Marine Welding - Credits: 2

Marine Welding is intended to provide the technician with a sound basic background in the marine welding field. Upon completion, the student will be able to select the proper materials for repairing or fabricating welding projects, choose the correct welding method for a specific application, and complete a welding project safely. Tig welding for repair of aluminum fabrication items; MIG, ARC, and OXY acetylene principles are covered in this course. COREQUISITE: 31461314 Outboard Motors.

31461317

Marine Engine Systems - Credits: 5

This course will provide students with advanced theory and hands-on experience to troubleshoot and repair marine engine fuel, oiling, cooling, starting, charging, and ignition systems. Also, students will learn about carburetor/ignition system synchronization and linkage adjustments, and storage procedures. Students will complete complex troubleshooting projects on running marine engines. PREREQUISITES: 31461314 Outboard Motors.

31461318

Outboard Gear Cases/Rigging - Credits: 5

Outboard motor gearcases, hydraulic trim and tilt, and steering systems are covered in this course. Students will learn how to diagnose failures, rebuild, and shim a variety of gearcases. Different types and brands of steering systems are covered. Students will learn how to repair, install, and replace steering systems. Trim and tilt units will be tested and repaired. This will give students a good working knowledge of hydraulics and troubleshooting procedures for various brands of trim and tilt systems. Installation of outboard motors on boat transoms and mechanical, fuel, oil, and electrical connections will be covered. PREREQUISITE: 31461314 Outboard Motors.

31461319

Sterndrive Systems - Credits: 5

Sterndrive transmissions, sterndrive transom plates, sterndrive trim and tilt, and power steering are covered in this course. Students will learn how to diagnose failures, rebuild, and shim a variety of gearcases. Different types of transom plates will be covered and will include shift, bellows, gimble ring, and bell housing repairs. Hydraulic lift systems will be studied and the student will learn how to repair and diagnose failures of cylinders, pumps, motors, and electrical systems related to trim systems. Marine power steering systems include the study of control valves, power steering pumps, and boat steering systems. PREREQUISITE: 31461314 Outboard Motors.

31461320

Fiberglass Boat Hull Repair/Boating Safety - Credits: 2

Students will learn basic boating safety items such as securing a boat to a dock, rules of the road, emergency procedures, and boating terms. Students will also learn how to repair, maintain, and adjust boat trailers. Students will learn how to complete minor fiberglass patching, fairing, gel-coating, and finishing repairs. PREREQUISITE: 31461314 Outboard Motors.

31461322

Inboard Engines - Credits: 5

This course will teach students the theory of how a four-stroke marine engine operates. Students will gain the skills needed to rebuild inboard four-stroke marine engines. Students will also learn the fundamentals of inboard fuel, ignition, starting, and charging systems.

31461323

Inboard Transmission Systems - Credits: 2

Inboard straight shaft transmissions are covered in this course. Velvet Drive transmissions will be the main training project. Hurth and Paragon transmissions will be covered to a lesser degree. Related components such as engine alignment, shafts, couplers, stuffing boxes, struts, strut bearing replacement, etc., will be examined also. PREREQUISITE: 31461314 Outboard Motors.

31461325

Marine Diesel - Credits: 1

This course provides a basic working knowledge of marine diesel engines and their systems. Marine diesel theory, fuel and air delivery, and lubrication and cooling systems will be covered. Bleeding of fuel systems, adjustment of valve trains and injector pumps, and other maintenance issues will also be studied.

31461326

Marine Engine Computer Control Systems - Credits: 4

In this course, students will understand the theory of computer-controlled fuel, ignition, oiling, and control systems used on inboard and outboard engines. Systems included are sterndrive and outboard motor EFI, and outboard direct fuel injection. Students will repair and troubleshoot these systems using a variety of computer diagnostic software. PREREQUISITE: 31461314 Outboard Motors.

Gainful employment information is available at this link: <http://www.witc.edu/pgmpages/marinetech/career.htm>. This information is provided as a federal requirement in an effort to help students make informed decisions related to the costs and potential employment in a chosen field.

Graduate Employment Information

(WITC Graduate Survey Responses 2009-2010; for most recent data, go to [witc.edu](http://www.witc.edu))

Number of graduates	12	Number employed	8	% employed in WITC district	71%
Number of responses	10	Percent employed	80%	Range of yearly salary	\$21,838-54,284
Number available for employment	10	Employed in related field	8	Average yearly salary	\$34,647

career vision