

MARINE MAINTENANCE TECHNOLOGY (MT)

Program Description

The Marine Maintenance Technology (MT) program prepares students for entry-level employment in the marine trades with training focused on repair and maintenance of recreational and small commercial craft located in boat repair yards, production boat shops, boat and motor dealerships, charter companies and independent employment.

The program includes engine and auxiliary equipment (mechanics), and hull repair and outfitting (rigger). All classes combine theory with practical hands-on training.

The mechanic courses provide instruction and training in repair and maintenance of inboard engines, and drive train systems, inboard outdrive propulsion systems, outboard engines, auxiliary systems, and vessels electrical systems.

The rigger courses provide instruction and training in repair and maintenance of vessels hull, decks and small parts along with installation of on-board electrical and mechanical systems. Detailed courses in structural development, hull repair and marine coatings are included.

Entry into the Program

Please apply to the Admissions Office. Students may enter the program at the beginning of any quarter, but may also enter at the beginning of any subject block.

For more information, contact the Department Chair, the Admissions Office, or visit the Marine Technology building in Oak Harbor.

Work-Based Learning

Students will integrate their classroom learning with work-based learning experience in Cooperative Education (MT 199) at a supervised work site. Department Chair approval is required. Credits and grades are based on job hours worked, work performance, and completion of learning objectives specified in the learning contract. Concurrent enrollment in the Education Seminar is required.

Associate in Technical Arts Degree

An Associate in Technical Arts degree (ATA) is awarded upon completion of a minimum of 90 credits consisting of core courses, an area of specialization and related general education coursework. All coursework must be 100 level or above with both an overall 2.0 grade point average and

a 2.0 grade point average in the Marine Technology courses.

SUGGESTED SCHEDULE

ATA MARINE MAINTENANCE TECHNOLOGY

Includes required ATA courses. Student schedule may vary based on entry point, credit load, and prerequisites. Consult with department chair or SVC counselor for scheduling options.

FIRST YEAR – PROGRAM CORE

FALL.....Cr	WINTER.....Cr	SPRINGCr
MT 100.....5	MT 104.....6	MT 108.....3
MT 101.....9	MT 111.....6	MT 203.....5
MT 105.....6	MT 202.....5	MT 208.....3
.....	†MATH 100.....5	†ENGL 170 or...3
.....	†ENGL& 101...5
.....	SOSC 113.....1
.....	SOSC 125.....2
Total 20	Total22	Total17+

SECOND YEAR

‡MT 199.....4		
CMST 125.....3		
OR CMST& 210.....5		
*LC/GE.....5		
PE 200.....2		
Plus minimum of 28 credits from area of specialization		
.....28		
Total42+		

AREAS OF SPECIALIZATION

BOAT PRODUCTION SHOP	CHARTER COMPANY	TRAILER BOAT DEALER
MT 106.....4	MT 106.....4	MT 112.....6
MT 201.....5	MT 112.....6	MT 206.....4
MT 204.....3	MT 149.....4	MT 207.....3
MT 206.....4	MT 204.....3	MT 211.....4
MT 207.....3	MT 206.....4	MT 212.....4
MT 210.....4	MT 212.....4	MT 215.....5
MT 255.....5	MT 253.....3	MT 216.....3
Total 28	TOTAL28	TOTAL29

BOAT REPAIR YARD

MT 106.....4
MT 149.....4
MT 201.....5
MT 204.....3
MT 206.....4
MT 210.....4
MT 254.....4
Total 28

INDEPENDENT EMPLOYMENT

28 credits of courses approved by the Department Chair.

* Learning Community (5-10 credits) or 5 credits of General Education (culture, natural world or arts). Must be outside of technical area, approved by Department Chair. Please see Index for Learning Communities.

† Students who do not receive an appropriate test score will require additional coursework to develop necessary skills for entry into class.

‡ MT 199 will be taken at the end of the one- or two-year program

Program Certificates

A Certificate in Marine Maintenance Technology is granted upon completion of

the following requirements with a 2.0 grade point average or above.

BOAT PRODUCTION SHOP CERTIFICATE

MT 100, 101, 104, 105, 108, 111, 199, 202, 203, 208, CMST125 or CMST& 210, ENGL 170 or ENGL& 101, PE 200, SOSC 113, 125, and MATH 100 plus a minimum of 8 credits from MT 106, 201, 204, 206, 207, 210, 255.

BOAT REPAIR YARD CERTIFICATE

MT 100, 101, 104, 105, 108, 111, 199, 202, 203, 208, CMST125 or CMST& 210, ENGL 170 or ENGL& 101, PE 200, SOSC 113, 125, and MATH 100 plus a minimum of 8 credits from MT 106, 149, 201, 204, 206, 210, 254.

CHARTER COMPANY CERTIFICATE

MT 100, 101, 104, 105, 108, 111, 199, 202, 203, 208, CMST125 or CMST& 210, ENGL 170 or ENGL& 101, PE 200, SOSC 113, 125, and MATH 100 plus a minimum of 8 credits from MT 106, 112, 149, 204, 206, 212, 253.

TRAILER BOAT DEALER CERTIFICATE

MT 100, 101, 104, 105, 108, 111, 199, 202, 203, 208, CMST125 or CMST& 210, ENGL 170 or ENGL& 101, PE 200, SOSC 113, 125, and MATH 100 plus a minimum of 8 credits from MT 112, 206, 207, 211, 212, 215, 216.

INDEPENDENT EMPLOYMENT CERTIFICATE

MT 100, 101, 104, 105, 108, 111, 199, 202, 203, 208, CMST125 or CMST& 210, ENGL 170 or ENGL& 101, PE 200, SOSC 113, 125, and MATH 100 plus a minimum of 8 credits approved by the Department Chair.

INDIVIDUAL TECHNICAL CERTIFICATE

An Individual Technical Certificate may be developed in conjunction with other programs to meet marketable objectives and goals with Department Chair approval.

Course Descriptions

MT 100 Marine Trades Introduction (5)

Introductory course familiarizes the student with marine trade opportunities. Students will become familiar with boat production shops, charter companies, trailer boat dealers, boat repair yards, independent employment, and manufacturers' representatives. The course is presented by means of lecture, field trips, and written exercises.

MT 101 Boat Lines, Stability & Construction (9)

A lecture-lab course in full size development and interpreting boat lines with application to construction practices. Lab includes the lofting of a full size vessel, template making, stability calculations, and training in hull construction/repair.

MT 104 Molded FRP Techniques and Structural Repair (6)

Introductory and in-depth course in fiberglass reinforced plastics with emphasis on chemical safety applicable to poly and vinyl-ester resins, solvents, and epoxies. With hands-on training in use of molds, gel coats, release agents, resins, cosmetic color matching and reinforcing materials in hand layup and structural repair.

MT 105 Safety, Tools, and Fastenings (6)

Shop safety including use of tools, fastening, and maintenance practices.

MT 106 Sail Boat Rigging (4)

Covers types of rigs, conversion or modifications of rigging. Proper tuning of rigging as well as selection of materials and approved installation methods for standing and running rigging.

MT 108 Boat Operation & Piloting (3)

A basic course in boating with classroom instruction in safety, rules of the road, safe loading and fire prevention, followed by on-the-water experience with outboards, inboard/outdrives, single and twin engine inboard vessels.

MT 111 Outboard Motor Maintenance I (6)

Introduction to outboard motors as the world's most common marine propulsion system. Operation and maintenance of outboard motors, specifically 2-stroke cycle portable units under 20 horsepower. Course covers ignition, fuel, cooling, lower units, tune-up procedures, winterizations.

MT 112 Marine Inboard Engines I (6)

Operation, service, troubleshooting and general maintenance of inboard gas and diesel engines in recreational and small commercial vessels. Gas engine tune-up of carbureted engines for ignition, fuel, and cooling systems. A basic engine service class. Prerequisite: MT 111 or instructor approval.

MT 149 Marine Engine Service (Diesel) (4)

Comprehensive course covering marine diesel engines and external systems service. Includes starting, charging, fuel, cooling, lubrication and winterization of engines.

MT 199 Cooperative Education Experience (4)

Supervised work experience in the field. Instructor permission required.

MT 201 Fiberglass Infusion-VIP (5)

Introductory and in-depth course in vacuum infused plastics. Training in infusion reinforcements, core identification, infusion equipment usage, manifolding systems both flow and feed, flow media, bag building, peel ply installation, resin building and infusion techniques.

MT 202 Vessel Electrical Systems I (5)

Basic AC and DC electrical systems as found on recreational and small commercial vessels. Installation and troubleshooting of engine operation systems for charging and starting, DC house systems for lights, pumps, navigational gear and shore power AC systems.

MT 203 Vessel Electrical Systems II (5)

Advanced vessel electrical systems, sizing of battery banks, multi-state voltage regulation, inverter systems, wind and solar charging systems, gen-sets and galvanic corrosion. Preparation for ABYC Marine Electrical Technician Certification. Prerequisite: MT 202.

MT 204 Vessel Auxiliary Systems (3)

Domestic systems found on recreational vessels including plumbing, pumps, piping, heating, cooking, cooling and refrigeration systems. Theory of operation, troubleshooting, repair and installation techniques for these systems. Preparation for ABYC Marine Refrigeration and Air Conditioning Certification. Students may earn ASE Refrigerant Gas Handling Certificate. Prerequisite: MT 202.

MT 206 Marine Drive Train System Inboard (4)

Theory and hands-on experience in inboard engine drive systems with emphasis on underwater running gear, repairs and alignments, steering systems, and remote control systems for engine and transmission.

MT 207 Accessories & Equipment Installation (3)

Installation of equipment, cabinets, or accessories in new or retrofit vessels.

MT 208 Wood Refinishing (3)

Removal, preparation, and application of finish material on wood.

MT 210 Marine Coating Systems (4)

Safety and equipment requirements for application of new generation protective systems for topsides and underwater use.

MT 211 Outboard Motor Maintenance II (4)

Troubleshooting and repair of large outboard motors. Mounting and rigging of remote controlled outboards. Covers carburetion and fuel injection of both 2-stroke and 4-stroke cycle outboards, linkage and synchronization adjustments, powerhead rebuilding, gearcase servicing. Student may qualify for OMC certification. Prerequisite: MT 111.

MT 212 Marine Inboard Engines II (4)

Advanced engine service including electronic ignition and fuel-injection systems. Focus is on modern sterndrive and inboard engine systems, theory of operation, troubleshooting using SCAN tools and digital diagnostic equipment. Prerequisite: MT 112.

MT 215 Marine Outdrives I (5)

Theory and application of inboard/outboard drive systems known as "sterndrives." Emphasis on advantages/disadvantages of system. In-depth study and hands-on work with OMC sterndrives (stringer mounted units), OMC Cobra drives (transom mounted units), Cobra SX units, Volvo AQ series sterndrives, and Volvo SX sterndrives. Students may qualify to earn OMC certification. Prerequisite: MT 111 or instructor approval.

MT 216 Marine Outdrives II (3)

Study of Mercruiser propulsion systems. Includes common service procedures, model identification, vertical drive rebuilding procedures, trim/tilt functions, shift adjustments, utilizing service manuals and parts information for problem-solving. Prerequisite: MT 215.

MT 252-255 Independent Study (2-5)

Special projects as approved by instructor and Department Chair.