

# MARINE DIVING TECHNOLOGIES

Students who enroll in the Marine Diving Technologies Program have options to obtain an Associate in Science Degree or Certificate in marine technology. Industry-based certifications meeting the American National Standards Institute (ANSI) "Commercial Diver Training—Minimum Standard ANSI/ACDE-01-2015". The Association of Diving Contractors International (ADCI) Surface Supplied Diving Certification International Endorsement and the International Diving Schools Association (IDSA) standards are also available for the field of commercial diving. The training is designed to meet the needs of the marine construction, research and tourism industries. These multi-billion dollar marine technology industries are dynamic and require personnel who have a broad training base involving technical skills above and below the water.

The Marine Science curriculum trains students interested in the fields of mariculture, boating and recreation, skin and Scuba diving, physical and biological oceanography, scientific research and marine science education. Satisfactory completion of the two-semester curriculum earns the student a Biological Sciences Departmental Marine Science Certificate. See the Biological Sciences (<https://catalog.sbcc.edu/academic-departments/biological-sciences/>) section of this Catalog.

In addition to the credit programs, the Department also offers:

- Commercial Diver Training, ANSI Certification
- Commercial Diving, ADC Certification

## Programs of Study

### Associate Degree

- Marine Diving Technician, Associate of Science (AS) (<https://catalog.sbcc.edu/academic-departments/marine-diving-technologies/marine-diving-technician-as/>)

### Certificate of Achievement

- Marine Diving Technician, Certificate of Achievement (C) (<https://catalog.sbcc.edu/academic-departments/marine-diving-technologies/marine-diving-technician-certificate-achievement/>)

### Skills Competency Award

- Commercial Diving, Skills Competency Award (SCA) (<https://catalog.sbcc.edu/academic-departments/marine-diving-technologies/commercial-diving-skills-competency-award/>)

### Department Award

- Marine Science, Department Award (D) (<https://catalog.sbcc.edu/academic-departments/biological-sciences/marine-science-departmental-award/>)

## Credit Courses

### Marine Diving Technologies (MDT)

#### MDT 100 Skin And Scuba Diving (1.8 Unit)

Hours: 60 (18 lecture, 42 lab)

An introductory SCUBA diving certification course taught under the standards of the National Association of Underwater Instructors (NAUI). Students obtain skills in basic diving techniques, physiology, skin and SCUBA equipment. Laboratory sessions focus on acquisition and application of necessary water skills in skin and SCUBA diving in a confined water (pool) environment. Practical application of diving skills are evaluated in a minimum of five open sea dives. Successful students will receive a lifetime certification as a SCUBA diver from NAUI.

Transfer Information: CSU Transferable, UC Transferable

UC Transfer Limit: MDT 100, MDT 105, HE 108, HE 213 and PE Activity courses combined: maximum credit, 4 units.

#### MDT 101 Information and Introduction to Marine Diving Technology (0.3 Units)

Limitations on Enrollment: Health and Safety regulations.

Hours: 8 (5 lecture, 3 lab)

Overview of marine diving and the SBCC Marine Diving Technologies modular curriculum. Assessment of swimming, diving and mathematical skills. Primary purpose is to provide information on the modular concepts, equipment requirements, fees and application process required for enrollment in the MDT Program.

#### MDT 104 Fundamentals and Practices of Diving (2 Units)

Hours: 36 (36 lecture)

Modular study of diving physics, physiology, dive planning and safety. Stresses the importance of environmental and equipment-related situations. Computations utilizing various decompression profiles emphasized.

#### MDT 105 Advanced Scuba Techniques (1.7 Unit)

Corequisites: MDT 101.

Limitations on Enrollment: Admission to Program.

Hours: 60 (16 lecture, 44 lab)

Practical application of Scuba diving techniques and skill building in the confined water and open ocean environments.

Transfer Information: CSU Transferable, UC Transferable

UC Transfer Limit: MDT 100 and 105 combined with PE activity and HE 213: maximum credit, 4 units.

#### MDT 106 Open Water Navigation And Rescue (0.7 Units)

Corequisites: MDT 105.

Limitations on Enrollment: Health and Safety regulations.

Hours: 24 (8 lecture, 16 lab)

Practical application of navigation and rescue skills in the ocean environment.

Transfer Information: CSU Transferable

#### MDT 107 Hyperbaric Chamber Operations (1.5 Unit)

Corequisites: MDT 101.

Hours: 48 (16 lecture, 32 lab)

Theoretical and practical application of hyperbaric chambers and treatment of diving and non-diving related accidents. Hands-on practice utilizing department's recompression chamber facility is the focus of laboratory activities.

**MDT 108 Rigging (1 Unit)**

Corequisites: MDT 101.

Hours: 40 (8 lecture, 32 lab)

Introduction to and practical application of basic rigging techniques, including knots, splices, block and tackle, and marlin spike seapersonship.

Transfer Information: CSU Transferable

**MDT 109 Seamanship and Small Boat Handling (1.5 Unit)**

Corequisites: MDT 101.

Hours: 48 (16 lecture, 32 lab)

Modular study and application of small boat handling, maritime rules of the road and navigational principles and practices.

**MDT 111 First Aid For The Diving Professional (1.4 Unit)**

Corequisites: MDT 101.

Hours: 24 (24 lecture)

Concurrent Modular certification program in oxygen administration, first aid for hazardous marine life injuries, CPR and AED use, with emphasis as a first responder to diving-related accidents. Certification available through appropriate agencies, which include American Red Cross and the Divers Alert Network (DAN).

Transfer Information: CSU Transferable, UC Transferable

**MDT 112 Introduction To Marine Welding (1.1 Unit)**

Corequisites: MDT 101.

Hours: 40 (8 lecture, 32 lab)

Concurrent Introductory module on the theory, practical application and procedures of cutting and welding in the topside environment. Skills are acquired and developed in welding shop environment. Prepares students for MDT 145 which is taught in the welding booth and underwater training tank.

Transfer Information: CSU Transferable

**MDT 140 Principles Of Surface-Supplied Diving (1 Unit)**

Corequisites: MDT 105.

Limitations on Enrollment: Must be a certified diver by a nationally recognized scuba diving agency.

Hours: 40 (8 lecture, 32 lab)

Introductory module which exposes students to the various types of diving apparatus and procedures in confined water training tanks. Emphasis on tending, dress-in and operational procedures which parallel a surface-supplied diving operation.

Transfer Information: CSU Transferable

**MDT 141 Commercial Diving Equipment (1.5 Unit)**

Corequisites: MDT 101.

Hours: 48 (16 lecture, 32 lab)

Course presents principles of operation and maintenance as applied to diesel engines, diving compressors and pneumatic tools. Particular emphasis placed upon identification of the various fittings used in an industrial environment. In addition, the maintenance and repair practices and procedures relating to surface-supplied diving head gear and diving umbilicals are presented and applied.

Transfer Information: CSU Transferable

**MDT 142 Surface-Supplied Ocean Diving (1.8 Unit)**

Prerequisites: MDT 140, MDT 141.

Hours: 60 (16 lecture, 44 lab)

Study and practical application of advanced tethered diving working procedures and operational theory. Particular emphasis is placed on charting dive profiles, computing decompression schedules and organizing field operations. All lab activities conducted in open sea environments which simulate actual working conditions likely to be encountered in commercial diving.

Transfer Information: CSU Transferable

**MDT 143 Mixed Gas Diving (1.1 Unit)**

Corequisites: MDT 142.

Hours: 44 (8 lecture, 36 lab)

Concurrent Advanced modular study of the physics and application of specialized gas mixtures, gas diving apparatus, decompression tables and, operational procedures.

Transfer Information: CSU Transferable

**MDT 145 Principles Of Underwater Cutting And Welding (1 Unit)**

Corequisites: MDT 112 and MDT 140.

Hours: 40 (8 lecture, 32 lab)

Introductory module on the theory, practical application, and procedures of welding and burning in the underwater environment. Skills are acquired and developed in a wet diving training tank. Prepares students for advanced techniques which are applied in the open sea environment.

Transfer Information: CSU Transferable

**MDT 146 Advanced Underwater Cutting And Welding (1.5 Unit)**

Corequisites: MDT 142, MDT 145.

Hours: 48 (16 lecture, 32 lab)

Concurrent Advanced practical application in the use of underwater cutting and welding techniques in the ocean and open water environments. Students utilize foundational techniques in advanced surface-supplied ocean diving to perform a multitude of individual and team projects.

Transfer Information: CSU Transferable

**MDT 147 Ocean Structures (0.5 Units)**

Hours: 8 (8 lecture)

Modular study of ocean structures likely to be encountered in the marine industry. Focuses on nomenclature and types and construction of offshore platforms, pipelines and other subsea structures.

Transfer Information: CSU Transferable

**MDT 148 Hydraulics I (0.7 Units)**

Corequisites: MDT 101.

Hours: 24 (8 lecture, 16 lab)

Concurrent Study of industrial fluid power mechanics, with a practical laboratory component, as related to marine equipment. Emphasis placed upon schematic design, interpretation, and the role of hydraulic equipment and control systems as applied to sub-sea work systems, tools and work class remotely-operated vehicles.

Transfer Information: CSU Transferable

**MDT 152 Underwater Tools And Inspection (1.7 Unit)**

Prerequisites: MDT 140.

Hours: 60 (16 lecture, 44 lab)

Study of techniques and tools used to collect data and perform inspection work in underwater environments. Students use a variety of equipment in hands-on application, including subsea video cameras, ultrasonic equipment, and other non-destructive testing devices. Students apply advanced diving skills in assembling and disassembling various underwater projects in an open sea environment.

Transfer Information: CSU Transferable

**MDT 154 Bell And Saturation Diving Procedures (1.7 Unit)**

Corequisites: MDT 143.

Hours: 60 (16 lecture, 44 lab)

Concurrent Intensive exposure to saturation diving theory, and a practical application of skills in bell/saturation diving. Practical training in bell and saturation diving operations, equipment and procedures. Culminates with the performance of a round-the-clock saturation diving run in the department's saturation diving complex.

Transfer Information: CSU Transferable

**MDT 179 Nitrox Diving (0.8 Units)**

Prerequisites: MDT 101, MDT 105.

Hours: 20 (8 lecture, 12 lab)

Modular study of EANx NITROX mixtures used in diving. Two optional open water dives may be made upon successful completion of classroom portion. Certification through the International Association of NITROX and Technical Divers (IANTD) as a NITROX diver is available upon completion of the entire course.

Transfer Information: CSU Transferable

**MDT 190 Assessment And Development Of Diving Competence (1 Unit)**

Hours: 18 (18 lecture)

Introductory module designed to enhance student knowledge of diverse employment opportunities in field of commercial diving. Bureau of Ocean Energy Management, Regulation and Enforcement mandated orientation and safety training.