

# MRSC A100L: OCEANOGRAPHY LABORATORY

Item	Value
Curriculum Committee Approval Date	11/13/2024
Top Code	040100 - Biology, General
Units	1 Total Units
Hours	54 Total Hours (Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)
Associate Arts Local General Education (GE)	<ul style="list-style-type: none"> <li>Area 5 Physical and Biological Sciences, Scientific Inquiry, Life Science (OB)</li> </ul>
Associate Science Local General Education (GE)	<ul style="list-style-type: none"> <li>Area 5 Physical and Biological Sciences, Scientific Inquiry, Life (OSB)</li> </ul>
California General Education Transfer Curriculum (Ca-GETC)	<ul style="list-style-type: none"> <li>Ca-GETC 5C Laboratory Activity (5C)</li> </ul>
Intersegmental General Education Transfer Curriculum (IGETC)	<ul style="list-style-type: none"> <li>IGETC 5C Laboratory Activity (5C)</li> </ul>
California State University General Education Breadth (CSU GE-Breadth)	<ul style="list-style-type: none"> <li>CSU B3 Laboratory Activity (B3)</li> </ul>

## Course Description

An orientation to marine science research process, techniques, and equipment. Investigations of physical and chemical properties of the sea, the air/sea interface, biological taxonomy, and classification, study of longitude, latitude, other navigational elements, ocean basin geography, and geology study. Evaluation of the sea as a physical, chemical, biological, and recreational resource. Includes at least three class field trips. Enrollment Limitation: MRSC A100M; students who complete MRSC A100L may not enroll in or receive credit for MRSC A100M. PREREQUISITE: MRSC A100 or MRSC A100H or concurrent enrollment. ADVISORY: ENGL A098 or ESL A099. Transfer Credit: CSU; UC.

## Course Level Student Learning Outcome(s)

1. Understand how the physical properties of water influence its unique characteristics.
2. Identify and describe the factors that influence water movement in the ocean.
3. Use the steps of the scientific method to accept or reject hypotheses.
4. Use a nautical chart, parallel rulers, and dividers to demonstrate the navigational principles of coordinates, longitude and latitude, and course heading.

5. Compare and contrast the internal and external characteristics of marine organisms and relate these characteristics to their function.

## Course Objectives

- 1. Discuss the oceanic environment with direct hands-on laboratory and field experiences.
- 2. Name and describe functions of equipment and instruments used by oceanographers to sample and study ocean conditions.
- 3. Name and describe characteristics of major animal phyla and plant divisions of marine life and be able to identify unknown ocean organisms.
- 4. Discuss the oceanographic primary productivity study and evaluation of a near shore benthic ocean community.
- 5. Discuss the elements that make up a coastal estuary and its ecology.
- 6. Describe the components of a marine food chain.
- 7. Describe the specific adaptations and characteristics of several types of marine mammal and be able to discuss their significance to ocean ecology.

## Lecture Content

This is a lab only course.

## Lab Content

Marine Science Research Methods Marine Charts, Navigation, Longitude, Latitude, Sextant use, Coordinates. Bathymetry Marine Sediments Water Chemistry Part I Water Chemistry Part II Tide and Wave Prediction Plankton Field trip to the Long Beach Aquarium Marine Fish and Invertebrates Marine Biological Benthic Sampling and Oceanographic Research Cruise The Estuarine and Salt March Ecosystems and Field Trip to Upper Newport Bay Ecological Reserve and Peter and Mary Muth Interpretive Center Marine Mammals

## Method(s) of Instruction

- Lab (04)

## Instructional Techniques

Extensive class syllabus, short review lectures with power point presentations, in class demonstrations, prelab assignments, lab exercise assignments, in-class data collection and evaluation. Three mandatory class field trips including an Oceanographic Research Cruise.

## Reading Assignments

Read lab manual.

## Writing Assignments

Each week of the course the student will demonstrate the students understanding of the connection of the course content with real-world oceanographic study, knowledge, and research in the answers provided on their laboratory exercises.

## Out-of-class Assignments

Complete prelabs based on reading the lab manual prior to class

## Demonstration of Critical Thinking

Lab exercise assignments that include pre-lab questions, graded lab exercises that includes critical thinking questions connecting learning

in each lab with the real world of oceanography, and weekly quizzes. At least three class field trips with required attendance.

### **Required Writing, Problem Solving, Skills Demonstration**

Each week of the course, the student will be required to demonstrate their understanding of the course content to real-world oceanographic study, knowledge, and research by answering brief response questions in the laboratory exercises.

### **Eligible Disciplines**

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.

### **Textbooks Resources**

1. Required Marine Science Department. Marine Science 100 Lab Manual, 24 ed. Macmillan Learning, 2024