



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	BIOL
Course Number:	18
Descriptive Title:	Marine Biology Laboratory
Division:	Natural Sciences
Department:	Biology
Course Disciplines:	Biological Sciences
Catalog Description:	This is an introductory marine biology laboratory course designed to complement the marine biology lecture course. The laboratory course will explore the animals and plants living in the ocean and their structure and adaptations for a marine environment. Local species will be identified and classified and local aquariums will be visited.
Prerequisite:	Biology 17 with a minimum grade of C or Concurrent Enrollment
Co-requisite:	
Recommended Preparation:	Eligibility for ENGL C1000 or equivalent
Enrollment Limitation:	
Hours Lecture (per week):	0
Hours Laboratory (per week):	3
Outside Study Hours:	0
Total Course Hours:	54
Course Units:	1
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	1/20/1998
Transfer UC:	Yes
Effective Date:	
General Education: ECC	Area 1 - Natural Sciences
Term:	
Other:	
CSU GE:	Area B2 - Physical Universe and its Life Forms: Life Science, Area B3 - Physical Universe and its Life Forms: Laborator Activity
Term:	

	Other:	
	IGETC:	Area 5B - Biological Science
	Term:	
	Other:	
	CalGETC:	
	Term:	
	Other:	
	Student Learning Outcomes:	SLO #1 Scientific Method The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. SLO #2 Tools The student will be able to use the compound and dissecting microscopes to observe cells and microorganisms. SLO #3 Content Knowledge (Energy Flow) The student will demonstrate how the principles of energy flow exist in relationships observed between autotrophs and heterotrophs in ecosystems.
	Course Objectives:	1. Name major parts and describe general functions of the compound and dissecting microscopes used in the lab and develop and exhibit manipulative skills in their use and care. 2. Discuss the unique properties of water and salt water. 3. Name and discuss several anatomical structures and physiological functions of selected marine organisms and their role in adaptation for marine life. 4. Explain the general concepts of classification and evolutionary trends of plants and animals of the ocean. 5. Demonstrate the ability to use a dichotomous key to identify selected specimens. 6. Name specific examples of major taxonomic groups, plants and animals in our local waters. The major taxonomic groups students will be responsible for include: Porifera, Cnidaria, Mollusca, Arthropoda, Echinodermata, Osteichthyes, Chondrichthyes, Mammalia.
	Major Topics:	I. Introduction to Microscopes (3.4 hours, lab) A. Compound

1. Pre-made slides

2. Wet mounts

B. Dissecting

II. pH, Salinity, dissolved oxygen (3.4 hours, lab)

A. pH strips

B. pH meter

C. salinity concentration

III. Taxonomic Classification (7.8 hours, lab)

A. History and overview

B. Binomial scientific name

C. Dichotomous Key

IV. Phytoplankton, zooplankton (3.4 hours, lab)

A. Unicellular Photosynthetic Algae

B. Colonial/Multicellular Algae

C. Unicellular Zooplankton

D. Multicellular Developmental Phase Zooplankton

V. Marine Algae, photosynthetic pigments (3.4 hours, lab)

A. Division Recognition of Algae

B. Pigment Description

C. Pigment Separation Techniques

VI. Porifera, Cnidaria (3.4 hours, lab)

A. Spicules

B. Sponge Frame Works in 3 Classes

C. Cnidaria Diploblastic Radial Body

D. Variation in Lifecycle of 3 Classes

VII. Mollusca (3.4 hours, lab)

A. Form and Function

B. 5 Classes of Mollusca

VIII. Arthropoda (3.4 hours, lab)

A. Form and Function

B. 5 Subphyla of Arthropoda

IX. Echinodermata (4.8 hours, lab)

A. Form and Function

1. Endoskeleton

2. Water Vascular System

B. 5 Subphyla of Echinodermata

X. Jawless and Cartilaginous Fish (3.4 hours, lab)

A. Agnatha/Myxini

1. Lamprey

2. Hagfish

B. Chondrichthyes

1. Placoid Scales

2. Articulating Lower Jaw

3. Sharks

4. Skates

5. Rays

XI. Bony Fish (7.4 hours, lab)

A. Ray fin

B. Lobe Fin

C. Scale Types

1. Ganoid

2. Ctenoid

	3. Cycloid XII. Marine mammals (3.4 hours, lab) A. Herbivores 1. Sirenia B. Omnivores/Carnivores 1. Cetacea 2. Carnivora XIII. Marine birds (3.4 hours, lab) A. Shore Birds B. Pelagic C. Flightless
Total Lecture Hours:	0
Total Laboratory Hours:	54
Total Hours:	54
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
A.2. Primary Method of Evaluation (Part 2 - all courses; choose one):	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Fish Lab Exercise: Using the preserved fish or the live fish in the marine aquarium, determine the family and scientific name of 5 "unknown" fish. These local Southern California marine fish may be keyed out using the Guide to Coastal Marine Fishes of California or other dichotomous keys. 2. Classification Exercise: Eight to 10 "unknown" invertebrate animals are provided. You must pick 6 animals to key. Start by using the key to phyla provided. After you have determined the phylum pick one of the several keys and guides to the marine fauna of Southern California for reference and determine the class, order, family, genus and species of each of the organisms.
Critical Thinking Assignment 1:	Determine the pH of sea water and fresh water using 50 ml. samples of each and testing with pH paper strips or a pH meter. Add one drop of HCl into each beaker and again test for pH. Repeat 10 times graphing the changing pH. Which sample changes pH more rapidly with the addition of the acid?
Critical Thinking Assignment 2:	On a field trip to the intertidal region at low tide you will determine the identity of marine organisms through the four tide zones. Place a line of cord going through the tide zones 1 through 4. Identify several organisms in each zone using a field guide. Describe how organisms' adaptations allow them to live in each of the zones of the tidal area.

Other Evaluation Methods:	Completion, Fieldwork, Homework Problems, Laboratory Reports, Matching Items, Multiple Choice, Objective Exam, Quizzes, True/False
Instructional Methods:	Demonstration, Field trips, Guest Speakers, Lab, Multimedia presentations
If other:	Internet Presentation/Resources
Work Outside of Class:	Course is lab only - minimum required hours satisfied by scheduled lab time
If Other:	
Up-To-Date Representative Texts:	Virginia Cass-Dudley; Gordon Dudley; James Sumich. Laboratory and Field Investigations in Marine Life. 11th ed. Jones and Bartlett Publisher, 2018. <i>Discipline Standard</i> .
Alternative Texts:	
Required Supplementary Readings:	In selected journals, field guides and keys to local species. For example: Marine Life of Southern California 2nd Edition by Donald Reish, Kendall/Hunt, Publisher.
Other Required Materials:	
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	Biology-17 Concurrent enrollment or prior completion of Biol 17 with a minimum grade of "C"
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Able to classify ocean specimens by use of taxonomic dichotomous keys. BIOL 17 - Explain the general concepts of classification and evolutionary trends of plants and animals of the ocean. Able to identify cellular structure of a variety of ocean specimens. BIOL 17 - Name and discuss several anatomical structures and physiological functions of selected marine organisms and their role in adaptation to marine life. Able to determine salinity of ocean water specimens. BIOL 17 - Discuss the unique properties of water and how it is affected by salt. Describe animal and plant adaptations to salt water. Student must be enrolled or have passed
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s): Bold	

the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	Eligibility for ENGL C1000 or qualification by appropriate assessment.
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	Students' chance of success in Marine Biology Laboratory is directly related to their ability to read the laboratory manual with comprehension. Students in this course need to have reading skills to understand and interpret information in college-level textbooks. The reading skills developed will greatly enhance their chance for understanding the reading material and successfully completing this course A student needs to have good reading skills to understand and interpret information provided in their textbooks. Summarize, analyze, and synthesize college-level texts. Employ basic study skills and reading strategies to explain at the literal level the content of a text.
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Jeanne Bellemin
Date:	10/01/1997
Original Board Approval Date:	01/20/1998
Last Reviewed and/or Revised by:	Eduardo Ayala
Date:	11/10/2025
Last Board Approval Date:	01/21/2026
Effective Term:	FA 2026