



**Course Name:** Introduction to Marine Science

**Course Number:** BIO\* E175

**Credits:** 3

**Catalog description:** This course is an introduction to marine science. Topics to be explored include general marine biology, intertidal ecology, plankton biology, marine communities, and the geomorphology of the New England coast. Some field work will be included.

**Prerequisite:** ENG\*101

## **General Education Competencies Satisfied:**

**HCC General Education Requirement Designated Competency Attribute Code(s):**

SCKX      **Scientific Knowledge & Understanding**

**Additional CSCU General Education Requirements for CSCU Transfer Degree Programs:**

SCRX      **Scientific Reasoning**

**Embedded Competency(ies):**

*None*

**Discipline-Specific Attribute Code(s):**

SCI      **Science elective**

## **Course objectives:**

### **General Education Goals and Outcomes:**

**Scientific Knowledge & Understanding:** Students will gain a broad base of scientific knowledge and methodologies in the natural sciences. This will enable them to develop scientific literacy, the knowledge and understanding of scientific concepts and processes essential for personal decision making and understanding scientific issues.

**Scientific Reasoning (for CSCU Transfer Degree Programs):** Students will become familiar with science as a method of inquiry. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.

### **Course Specific Objectives:**

1. Identify the disciplines that marine science encompasses;



2. Survey and describe the major taxonomic groups that inhabit marine environments;
3. Explain the theories of the origins and evolution of life and how they have changed over time;
4. Describe the major marine habitats and the organisms that inhabit them;
5. Relate structural and functional adaptations of marine organisms to survival in a variety of marine habitats;
6. Identify and explain the physical, ethical and ecological consequences of human interaction with marine environments;
7. Describe the local coastal environment.
8. Analyze the results of a marine science experiment for accuracy and reasonableness;
9. Develop and implement a plan to collect data using a local beach, use the data to describe the distribution of animals on that beach (both graphically and verbally) and interpret the results to explain why certain organisms are found on one part of the beach and not another.

**Course Content:**

1. Introduction to oceans and marine science
  1. Disciplines within oceanography
    - I. Physical oceanography
    - II. Chemical oceanography
    - III. Geological oceanography
    - IV. Biological oceanography
    - V. Ecology
  2. History of marine science and marine science milestones
  3. Distribution of the world's oceans
  4. The physical and chemical properties of seawater
  5. Ocean movements
    - I. tides
    - II. currents
    - III. water circulation
2. Ecological and biological concepts
  1. Adaptations of marine life
  2. Basic ecological concepts
    - I. laws of thermodynamics
    - II. food webs
    - III. energy transfer
3. An overview of marine organisms
  1. Systematics and Taxonomy
  2. Plants: Primary Producers
    - I. Phytoplankton
    - II. Macro algae
    - III. Marine Vascular Plants
  3. Animals
    - I. Protozoa
    - II. Porifera
    - III. Cnidaria and Ctenophores
    - IV. Annelids and other worm-like phyla
    - V. Mollusks



- VI. Arthropods
- VII. Echinoderms
- VIII. Chordates
- 4. Oceanic Habitats
  - 1. Benthos and Benthic Communities
    - I. Seafloor Characteristics
    - II. Deep-sea vents
  - 2. Coral Reefs
  - 3. Pelagic Communities
  - 4. Estuaries
- 5. Coastal Habitats
  - 1. Salt marshes
  - 2. Mangroves
  - 3. Intertidal zone
    - I. sandy shores
    - II. rocky shores
    - III. mudflats
- 6. Humans and the Sea
  - 1. Ocean resources
    - I. food from the sea
    - II. mining the sea
  - 2. Coastal management
  - 3. Oceanic Pollution
    - I. Sewage
    - II. Toxins
    - III. oil spills
    - IV. trash

Date Course Created:

Date of Last Revision: 02/27/2017