

MST R100L: MARINE BIOLOGY LABORATORY

Originator

snewby

College

Oxnard College

Discipline (CB01A)

MST - Marine Studies

Course Number (CB01B)

R100L

Course Title (CB02)

Marine Biology Laboratory

Banner/Short Title

Marine Biology Laboratory

Credit Type

Credit

Start Term

Fall 2021

Co-listed (Same-as) Course(s)

BIOL R100L

Taxonomy of Programs (TOP) Code (CB03)

0401.00 - Biology, General

SAM Priority Code (CB09)

E - Non-Occupational

Control Number

CCC000601913

Primary Minimum Qualification

BIOLOGICAL SCIENCES

Department

Biology (2021)

Division

Oxnard Math/Science/HED/Athletics/PE

Catalog Course Description

This laboratory course provides an introduction to the diversity of marine organisms and the physical and biological processes that influence their structure, life history, and behavior.

Taxonomy of Programs (TOP) Code (CB03)

0401.00 - Biology, General

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

A (Transferable to both UC and CSU)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

E - Non-Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

Y - Not Applicable

Support Course Status (CB26)

N - Course is not a support course

Field trips

May be required

Faculty notes on field trips; include possible destinations or other pertinent information

Local beaches, harbors, island, and natural history museums or aquaria.

Grading method

Letter Graded

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Is this course part of a family?

No

Units and Hours

Carnegie Unit Override

No

In-Class**Lecture****Activity****Laboratory****Minimum Contact/In-Class Laboratory Hours**

52.5

Maximum Contact/In-Class Laboratory Hours

52.5

Total in-Class**Total in-Class****Total Minimum Contact/In-Class Hours**

52.5

Total Maximum Contact/In-Class Hours

52.5

Outside-of-Class**Internship/Cooperative Work Experience****Paid****Minimum Paid Internship/Cooperative Work Experience Hours**

0

Maximum Paid Internship/Cooperative Work Experience Hours

0

Unpaid**Minimum Unpaid Internship/Cooperative Work Experience Hours**

0

Maximum Unpaid Internship/Cooperative Work Experience Hours

0

Total Outside-of-Class**Total Outside-of-Class****Minimum Outside-of-Class Hours**

0

Maximum Outside-of-Class Hours

0

Total Student Learning**Total Student Learning****Total Minimum Student Learning Hours**

52.5

Total Maximum Student Learning Hours

52.5

Minimum Units (CB07)

1

Maximum Units (CB06)

1

Prerequisites

BIOL R100 or concurrent enrollment

Advisories on Recommended Preparation

READ R095 or ESL R095 and ENGL R097 or ENGL R100 or ENGL R101

Entrance Skills

Entrance Skills

Knowledge of marine organisms

Prerequisite Course Objectives

BIOL R100-Identify major groups of marine organisms

BIOL R100-Describe marine organism adaptations

BIOL R100-Outline the physical, chemical, and geological aspects of the marine environments examined

BIOL R100-Describe the range of ocean habitats and the organisms within each habitat

BIOL R100-Explain how organisms, including humans, within and among ocean habitats interact

BIOL R100-Predict the effects of certain types of disturbance on the marine ecosystem and individual inhabitants and explain how to test that prediction with the scientific method

Entrance Skills

Ability to read at a college level

Prerequisite Course Objectives

ESL R095-Demonstrate increased reading comprehension of content specific materials from a variety of disciplines.

ESL R095-Demonstrate an expanded vocabulary and understanding of general academic, technical, and domain-specific words and phrases sufficient for reading and writing at the college and career readiness levels.

ESL R095-Read at a faster rate through skimming and scanning skills.

ESL R095-Determine the literal and implied main idea, theme or conclusions of an expository or academic fiction or non-fiction text and how it is supported by key details.

READ R095-Demonstrate increased reading comprehension of content specific materials from a variety of disciplines.

READ R095-Demonstrate an expanded vocabulary and understanding of general academic, technical, and domain-specific words and phrases sufficient for reading and writing at the college and career readiness levels.

READ R095-Read at a faster rate through skimming and scanning skills.

READ R095-Determine the literal and implied main idea, theme or conclusions of an expository or academic fiction or non-fiction text and how it is supported by key details.

Entrance Skills

Ability to write at a college level

Prerequisite Course Objectives

ENGL R097-Write essays with acceptable college-level grammar, syntax, spelling, and idiomatic usage

ENGL R097-Analyze essay exam questions and organize and write effective responses

Entrance Skills

Ability to read and write at a college level

Prerequisite Course Objectives

ENGL R100-Write essays with acceptable college-level grammar, syntax, spelling, and idiomatic usage.

ENGL R100-Analyze essay exam questions and organize and write effective responses.

ENGL R100-Read college-level materials and recognize the main idea.

ENGL R100-Distinguish fact from opinion.

Entrance Skills

Ability to read and write at a college level

Prerequisite Course Objectives

ENGL R101-Demonstrate college-level control of mechanical elements of writing such as grammar, syntax, spelling, vocabulary, and idiomatic usage

ENGL R101-Demonstrate critical thinking skills and rhetorical awareness in analyzing others' non-fiction writing and in developing essays

Requisite Justification**Requisite Type**

Prerequisite

Requisite

BIOL R100

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Closely related lecture/laboratory course

Requisite Type

Concurrent

Requisite

BIOL R100

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Closely related lecture/laboratory course

Requisite Type

Advisory

Requisite

ENGL R097

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Advisory

Requisite

ENGL R100

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Advisory

Requisite

ENGL R101

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Advisory

Requisite

READ R095

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Requisite Type

Advisory

Requisite

ESL R095

Requisite Description

Course not in a sequence

Level of Scrutiny/Justification

Content review

Student Learning Outcomes (CSLOs)**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|---|
| 1 | Identify the first step of the scientific method as observation. |
| 2 | Identify the phylum an organism based on phylum characteristics. |
| 3 | Use a dichotomous key to identify an unknown organism to the indicated level of classification. |

Course Objectives**Upon satisfactory completion of the course, students will be able to:**

- | | |
|---|--|
| 1 | Identify major groups of marine organisms |
| 2 | Identify and describe marine organism adaptations and anatomy |
| 3 | Measure the physical, chemical, and geological aspects of the marine environments examined with appropriate laboratory equipment |
| 4 | Predict the outcome of marine organism behavior and test that prediction with the scientific method |

Course Content**Lecture/Course Content**

1. Scientific Method
 - a. Scientific equipment and the metric system
 - b. Sandy beach sampling
 - c. Steps of the scientific method
2. Physical Properties of Seawater
 - a. Temperature
 - b. Salinity
 - c. Density
 - d. Acidity
3. Marine Organisms and Adaptations

- a. Classification tools
 - b. Plankton and use of a microscope
 - c. Marine algae and pigments
 - d. Invertebrates
 - i. porifera
 - ii. cnidaria
 - iii. mollusca
 - iv. arthropoda
 - v. echinodermata
 - e. Non-bony fish
 - f. Bony fish
4. Biodiversity

Laboratory or Activity Content

- 1. Scientific Method
 - a. Scientific equipment and the metric system
 - b. Sandy beach sampling
 - c. Steps of the scientific method
- 2. Physical Properties of Seawater
 - a. Temperature
 - b. Salinity
 - c. Density
 - d. Acidity
- 3. Marine Organisms and Adaptations
 - a. Classification tools
 - b. Plankton and use of a microscope
 - c. Marine algae and pigments
 - d. Invertebrates
 - i. porifera
 - ii. cnidaria
 - iii. mollusca
 - iv. arthropoda
 - v. echinodermata
 - e. Non-bony fish
 - f. Bony fish
- 4. Biodiversity

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Skills demonstrations
Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Essays
Group projects
Laboratory activities
Laboratory reports
Objective exams
Projects
Problem-Solving Assignments
Problem-solving exams
Quizzes
Research papers
Skills demonstrations

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
 Computer-aided presentations
 Collaborative group work
 Class activities
 Class discussions
 Distance Education
 Demonstrations
 Field trips
 Internet research
 Laboratory activities
 Lecture
 Practica
 Small group activities

Describe specific examples of the methods the instructor will use:

1. Instructor will utilize lecture, video, internet material, models, and demonstrations reviewing key points of laboratory topics and activities. Example: Summary of characteristics and internal anatomy associated with the phylum arthropoda.
2. Students will participate in laboratory activities done individually and in groups. Example: Using a secchi disc to measure the depth light penetrates in the water column.
3. Instructor will lead field trip to collect data on intertidal community members for analysis by students.

Representative Course Assignments

Writing Assignments

1. Short answer questions related to lab activities, such as "Why do blue crabs have larger gills than the bivalve we dissected last week?"
2. Short answer questions related to assigned primary literature, for example "Why do marine protected areas, where lobster may not be fished, result in higher abundances of kelp?"

Critical Thinking Assignments

1. Students will design a controlled experiment to test a prediction. Example: Design an experiment to test which of two foods a hermit crab will prefer.
2. Students will collect and analyze laboratory data to determine if a testable prediction was correct. Example: Determine if prediction about hermit crab food preference was accurate.

Reading Assignments

1. Read over lab background information and activities before attending class
2. Assigned primary literature articles, such as Lafferty, K.D. 2004. *Fishing for lobsters indirectly increases epidemics in sea urchins*. Ecol. App. 14(5):1566-1573.

Skills Demonstrations

1. Students will demonstrate correct use of laboratory equipment including microscopes, plankton nets, secchi discs, and spectrophotometers.
2. Students will dissect representative organisms and identify indicated organs.

Other assignments (if applicable)

1. Students will calculate averages of data sets, such as how many seconds it takes a hermit crab to respond to mussel extract.
2. Students will accurately display experimental results by creating line or bar graphs to display group or class data, for example line graphs showing the relationship between light wavelength and the amount absorbed for a green pigment.

Outside Assignments

Representative Outside Assignments

1. Readings from selected scientific journals and publications.

District General Education**A. Natural Sciences**

A1. Biological Science

Approved

B. Social and Behavioral Sciences**C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning**

B3 Laboratory Activity

Approved

Area C: Arts and Humanities**Area D: Social Sciences****Area E: Lifelong Learning and Self-Development****Area F: Ethnic Studies****CSU Graduation Requirement in U.S. History, Constitution and American Ideals:****IGETC****Area 1: English Communication****Area 2A: Mathematical Concepts & Quantitative Reasoning****Area 3: Arts and Humanities****Area 4: Social and Behavioral Sciences****Area 5: Physical and Biological Sciences**

Area 5C: Laboratory Science

Approved

Area 6: Languages Other than English (LOTE)**Textbooks and Lab Manuals**

Resource Type

Manual

Description

Dudley, G., Sumich, J.L., and Dudley, V. (2018). *Laboratory and Field Investigations in Marine Biology* (11th). Jones & Bartlett Learning. Burlington, MA.

Resource Type

Other Instructional Materials

Description

Niesen (2000). *Marine Biology Coloring Book* (2nd). New York HarperCollins Publishers. This is the most recent edition of this text.

Resource Type

Other Resource Type

Description

Sheldon, I. (2007). *Seashore of Southern California*. Lone Pine Publishing International Inc. This is the most recent edition of this field guide.

Resource Type

Other Resource Type

Description

Sept, J.D. (2009). *The Beachcomber's Guide to Seashore Life of California Revised*. Harbour Publishing. This is the most recent edition of this field guide

Distance Education Addendum**Definitions****Distance Education Modalities**

Hybrid (51%–99% online)

Hybrid (1%–50% online)

100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact**Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post on discussion board topics relevant to weekly lab topic such as changes they might make to an experimental design.
Other DE (e.g., recorded lectures)	Faculty may record video lectures on the course content including characteristics to use when identifying members of a particular phylum and conducting a demonstration dissection.
E-mail	Faculty will communicate with students via email regarding course information and concerns.

Video Conferencing

Faculty may utilize online live meetings with students to answer questions or provide information regarding specific course related materials.

Hybrid (51%–99% online) Modality:**Method of Instruction****Document typical activities or assignments for each method of instruction**

Asynchronous Dialog (e.g., discussion board)

Students will post on discussion board topics relevant to weekly lab topic such as changes they might make to an experimental design.

Other DE (e.g., recorded lectures)

Faculty may record video lectures on the course content including characteristics to use when identifying members of a particular phylum and conducting a demonstration dissection.

E-mail

Faculty will communicate with students via email regarding course information and concerns.

Video Conferencing

Faculty may utilize online live meetings with students to answer questions or provide information regarding specific course related materials.

100% online Modality:**Method of Instruction****Document typical activities or assignments for each method of instruction**

Asynchronous Dialog (e.g., discussion board)

Students will post on discussion board topics relevant to weekly lab topic such as changes they might make to an experimental design.

Other DE (e.g., recorded lectures)

Faculty may record video lectures on the course content including characteristics to use when identifying members of a particular phylum and conducting a demonstration dissection.

E-mail

Faculty will communicate with students via email regarding course information and concerns.

Video Conferencing

Faculty may utilize online live meetings with students to answer questions or provide information regarding specific course related materials.

Examinations**Hybrid (1%–50% online) Modality**

Online

On campus

Hybrid (51%–99% online) Modality

Online

On campus

Primary Minimum Qualification

BIOLOGICAL SCIENCES

Additional Minimum Qualifications**Minimum Qualifications**

Ecology

Review and Approval Dates**Department Chair**

09/15/2020

Dean

09/16/2020

Technical Review

10/14/2020

Curriculum Committee

10/14/2020

DTRW-I

MM/DD/YYYY

Curriculum Committee

11/25/2020

Board

MM/DD/YYYY

CCCCO

MM/DD/YYYY

Control Number

CCC000584543

DOE/accreditation approval date

MM/DD/YYYY