

# Modesto Junior College

## Course Outline of Record Report

11/04/2021



### BIO140 : Introduction to Marine Biology

#### General Information

Faculty Author:	<ul style="list-style-type: none"> <li>• Derek Madden</li> <li>• Tripp, Catherine</li> <li>• Richmond, Jennifer</li> <li>• Martin, David</li> <li>• Gervin, Dennis</li> </ul>
Attachments:	<p>Biology Batch DE Form Spring 2021.pdf</p> <p>ASSIST CAS BIO 140.pdf</p> <p>BIO-140_SU16.pdf</p> <p>BIO_140_STAND.pdf</p> <p>BIO_140_CAR.pdf</p> <p><a href="#">Download</a></p>
Course Code (CB01) :	BIO140
Course Title (CB02) :	Introduction to Marine Biology
Department:	Biology
Proposal Start Date:	MJC Fall 2023
TOP Code (CB03) :	(0401.00) Biology, General
CIP Code:	(26.0101) Biology/Biological Sciences, General
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Course Control Number (CB00) :	CCC000294091
Curriculum Committee Approval Date:	10/13/2015
Board of Trustees Approval Date:	11/12/2015
External Review Approval Date:	09/01/2014
Course Description:	Introduction to the natural history of plant and animals living in temperate and tropical marine habitats, including rocky shore, mudflat, sandy beach, salt marsh, coral reef, mangral forest, open ocean, deep ocean, and bay/estuary. Polar and subpolar marine ecosystems will also be introduced.
Proposal Type:	Mandatory Revision
	Mandatory 5-year review.
Faculty Author:	No value

#### Discipline(s)

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Master Discipline Preferred: 

- Biological Sciences

Bachelors or Associates Discipline Preferred: No value

### Course Coding

Basic Skill Status (CB08)

Course is not a basic skills course.

Course Special Class Status (CB13)

Course is not a special class.

Grading

- A-F or P/NP

Allow Students to Gain Credit by Exam/Challenge

Repeatability

0

Course Prior To College Level (CB21)

Not applicable.

Rationale For Credit By Exam/Challenge

No value

Type of Repeat

No value

Allow Students To Audit Course

Course Support Course Status (CB26)

Course is not a support course

### Associated Programs

Course is part of a program (CB24)

Associated Program

Award Type

Active

CSU General Education Pattern

Certificate of Achievement

MJC Summer 2020 to MJC Summer 2021

General Studies: Emphasis in Natural

A.A. Degree

MJC Summer 2020

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Sciences		
IGETC Pattern	Certificate of Achievement	MJC Summer 2020 to MJC Summer 2021
MJC-GE Pattern	MJC-GE Pattern	MJC Summer 2020 to MJC Summer 2021
CSU General Education Pattern (In Development)	Certificate of Achievement	MJC Summer 2022
IGETC Pattern (In Development)	Certificate of Achievement	MJC Summer 2022

### Transferability & Gen. Ed. Options

Course General Education Status (CB25)

Y

Transferability

Transferability Status

Transferable to both UC and CSU

Approved

#### MJC General Education (MJC-GE)

##### Categories

##### Status

##### Approval Date

##### Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable.)

Area A: Natural Sciences

(MJC-GE:A)

Approved

No value

No Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable. defined.

#### CSU General Education Breadth Pattern (CSU-GE)

##### Categories

##### Status

##### Approval Date

##### Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable.)

Area B2: Biological Sciences

(CSU-GE:B2)

Approved

No value

No Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable. defined.

Area B3: Laboratory Activity

(CSU-GE:B3)

Approved

No value

#### Intersegmental General Education Transfer Curriculum (IGETC) (for CSU and UC)

##### Categories

##### Status

##### Approval Date

##### Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable.)

Area 5B: Biological Sciences

(IGETC: 5B)

Approved

No value

No Rationale (include Comparable Course, C-ID Descriptor, etc. if applicable. defined.

Area 5C: Laboratory Activity

(IGETC: 5C)

Approved

No value

### Field Trips

Field trips are required.

Yes

No  
Maybe

## Comparable Lower-Division Courses at UC/CSU v2

Courses numbered 100-299 require identification two comparable lower-division courses from CSU or UC from the current institutional catalog (not schedule). At least one course from CSU, and if requesting/maintaining UC general elective transfer, one course from UC. Please identify the CSU campus offering this course. (Term type is indicated in parentheses)

CSU, Long Beach (SEM)

### CSU Catalog Year

2021-2022

Provide the CSU course code (e.g., ENGL 1A) from the most current official Catalog (not schedule). Curriculum changes each year.

BIOL 153

### CSU Course Title

Introduction to Marine Biology

Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?

Yes

Select the institution that offers the second comparable course from CSU or UC. If seeking or maintaining UC transferability, you must supply a UC campus. (Term type is indicated in parentheses)

UC Berkeley (SEM)

### CSU/UC Catalog Year

2021-2022

Provide the CSU course code (e.g., ENGL 1A) from the most current official Catalog (not schedule). Curriculum changes each year.

ESP 82

### CSU Course Title

Oceans

Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?

No

Select the institution that offers the third comparable course from CSU or UC. If seeking or maintaining UC transferability, you must supply a UC campus if not already provided above. (Term type is indicated in parentheses)

UC Santa Cruz (QTR)

### CSU/UC Catalog Year

2020-2021

Provide the CSU/UC course code (e.g., ENGL 1A) from the current official Catalog (not schedule). Curriculum changes each year.

OCEA 1

**CSU Course Title**

The Oceans

**Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?**

No

**Units and Hours**

**Summary**

<b>Minimum Credit Units (CB07)</b>	4
<b>Maximum Credit Units (CB06)</b>	4
<b>Total Course In-Class (Contact) Hours</b>	108
<b>Total Course Out-of-Class Hours</b>	108
<b>Total Student Learning Hours</b>	216

**Credit / Non-Credit Options**

<b>Course Credit Status (CB04)</b>	<b>Course Non Credit Category (CB22)</b>	<b>Non-Credit Characteristic</b>
Credit - Degree Applicable	Credit Course.	No Value

<b>Course Classification Code (CB11)</b>	<b>Funding Agency Category (CB23)</b>	Cooperative Work Experience Education Status (CB10)
Credit Course. Variable Credit Course	Not Applicable.	

**Weekly Student Hours**

	<b>In Class</b>	<b>Out of Class</b>
Lecture Hours	3	6
Laboratory Hours	3	0
Activity Hours	0	0

**Course Student Hours**

<b>Course Duration (Weeks)</b>	18
<b>Hours per unit divisor</b>	52.5
<b>Course In-Class (Contact) Hours</b>	
Lecture	54
Laboratory	54
Activity	0
<b>Total</b>	108
<b>Course Out-of-Class Hours</b>	
Lecture	108
Laboratory	0
Activity	0
<b>Total</b>	108

### Time Commitment Notes for Students

No value

### Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

### Prerequisites, Corequisites, and Advisories

No Value

### Requisite Skills

Requisite Skills	Description
No value	No value

### Specifications

Methods of Instruction

Methods of Instruction (Typical)

INSTRUCTIONAL METHODS

MOI

1. Demonstration
2. Discussion
3. Lecture
4. Use of models
5. Guided field activities
6. Guided laboratory exercises
7. Guided library research

Assignments (Typical)

#### **Evidence of Workload for Course Units (Quantity)**

1. Weekly assigned reading
2. Completion of weekly laboratory reports
3. Completion of field trip reports (one per fieldtrip; two to four per semester)
4. Library research project (one per semester)

**Evidence of Critical Thinking (Quality)**

1. Weekly reading will be assigned from the course textbook, and/or other scholarly articles on topics in marine biology, oceanography, and/or global change.
2. Laboratory reports will require students to record and analyze data collected, for example: using a spectrophotometer, students will record the absorption spectra of the pigments found in green algae and relate these results to the depth of water where these organisms may live.
3. Feld trip reports will require students to record and interpret their field trip observations. As an example, the report for a field trip to the rocky intertidal zone may require students to assess the adaptations of organisms observed in different microhabitats.
4. Library research projects will provide students an opportunity to further explore topics in marine biology while synthesizing course content. For example, a student might choose a library research project investigating the effects of the ocean's changing pH on a specific group of marine organisms.

Methods of Evaluation (Typical)

Rationale

FORMATIVE EVALUATION

1. Examinations
2. Quizzes
3. Laboratory reports
4. Field reports

SUMMATIVE EVALUATION

1. Final exam
2. Completion of class project: research paper, and/or class presentation

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Peter Castro & Michael E. Hunter	Marine Biology 11th Ed.)	McGraw-Hill	2019	9781259880032

Other Instructional Materials

Description	Scholarly articles, field reports and other readings as assigned by instructor.
Author	Various authors
Citation	No value
Online Educational Resources	No value

**Textbook Exceptions and Supplementals**

**Title of Other Material**

Instructor generated lab materials

**Who prepared or published this supplemental material?**

Teri Curtis and Catherine Tripp

**Publish date**

2015

**Are any of the textbook editions cited on this proposal considered "Classics" (typically with a publish date more than 5 years old)?**

Yes

No

Unsure

**If yes, explain why this older text is used in the course. Reasons should focus on content only.**

No Value

## Materials Fees v2

**Is there a materials fee for this course?**

No

**Provide a cost breakdown for all items provided for a materials fee. Each item must become "tangible personal property" of student upon payment of the fee and completion of the course.**

No Value

**Explain how these materials are related to the Student Learning Objectives for the course.**

No Value

**Explain how the materials have continuing value outside the classroom.**

No Value

**Is the amount of the material the student receives commensurate with the fee paid AND with the amount of material necessary to achieve the Student Learning Objectives for the course AND provided as the district's actual cost?**

No Value

**If no is checked, explain why.**

No Value

**If the district is NOT the only source of these materials, explain why the students have to pay a fee to the district rather than supply the materials themselves. (Cost savings? Health/Safety? Consistency/Uniformity?)**

No Value

## Learning Outcomes and Objectives

Course Objectives

Describe the general characteristics of the major groups of marine organisms.



Identify dominant organisms of each marine ecosystem studied.

Identify and describe the interacting physical forces of the marine environment.

Identify and describe chemical factors of marine ecosystems.

Assess the interactions of chemical, physical and biological factors of marine ecosystems.

Illustrate and explain the flow of energy and the cycling of materials in marine ecosystems.

Analyze the relationships between marine organisms within marine communities.

Evaluate the effects of human activities on marine environments.

#### Lab Objectives

Demonstrate proper use of compound and dissecting microscopes.

Use scientific instruments to make qualitative observations and to collect quantitative data.

Record and analyze data gathered in the laboratory and/or in the field.

#### CSLOs

Interrelate the general physical nature, biological characteristics and composition of marine ecosystems.

Expected SLO Performance: 0.0

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*ISLOs* Students will generate and develop capabilities for creative expression and effective communication. Students will be able to: Articulate ideas through written, spoken, and visual forms appropriately and effectively in relation to a given audience and social context. Utilize interpersonal and group communication skills, especially those that promote collaborative problem-solving, mutual understanding, and teamwork. Mindfully and respectfully listen to, engage with and formally respond to the ideas of others in meaningful ways. Plan, design, and produce creative forms of expression through music, speech, and the visual and performing arts.

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Students will develop critical and analytical thinking abilities, cultivate creative faculties that lead to innovative ideas, and employ pragmatic problem-solving skills. Students will be able to: Analyze differences and make connections among intellectual ideas, academic bodies of knowledge and disciplinary fields of study. Develop and expand upon innovative ideas by analyzing current evidence and praxis, employing historical and cultural knowledge, engaging in theoretical inquiry, and utilizing methods of rational inference. Utilize the scientific method and solve problems using qualitative and quantitative data. Demonstrate the ability to make well-considered aesthetic judgments.

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Students will be prepared to engage a global world while exhibiting a broad sense of diversity, cultural awareness, social responsibility and stewardship.

Students will be able to: Interpret and analyze ideas of value and meaning exhibited in literature, religious practices, philosophical perspectives, art, architecture, music, language, performance and other cultural forms. Describe the historical and cultural complexities of the human condition in its global context, including the emergence and perpetuation of inequalities and the interplay of social, political, economic and physical geographies. Analyze and evaluate the value of diversity, especially by collaborating with people of different physical abilities and those with distinct linguistic, cultural, religious, lifestyle, national, and political backgrounds. Demonstrate a pragmatics of ethical principles, effective citizenship, and social responsibility through cross-cultural interactions, volunteerism, and civic engagement.

Identify the dominant organisms of major marine communities.

Expected SLO Performance: 0.0

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Describe the general characteristics of the major groups of marine organisms.

Expected SLO Performance: 0.0

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Assess the impact of human activities on the marine environment.

Expected SLO Performance: 0.0

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## Content

## Course Content

1. Introduction
2. Physical factors of marine environment
  1. Temperature, pressure, illumination
  2. Waves, currents, and tides
  3. Substrate types
  4. Coastal features
3. Chemical factors of marine environment
  1. Salinity
  2. Dissolved oxygen
  3. pH and buffering system
4. Biological factors of marine environment
  1. Energy flow through food chain
  2. Nutrient cycles
  3. Metabolic processes (photosynthesis, chemosynthesis, etc.)
  4. Community structure (predator-prey, mutualism, etc.)
  5. Reproductive patterns
5. Marine habitats
  1. Temperate shoreline and continental shelf
    1. Intertidal
      1. rocky
      2. sandy beach
      3. mudflat
    2. Subtidal
      1. kelp forest
      2. sandy bottom
    3. Estuary and salt marsh
    4. Outer coast
  2. Oceanic
    1. Pelagic (photic, aphotic)
    2. Benthic
  3. Tropical marine
    1. Coral reef
    2. Mangal swamp
    3. Sea grass bed
  4. Polar and subpolar
6. Photosynthetic organisms
  1. Phytoplankton
  2. Macroalgae
  3. Vascular plants
7. Marine animals
  1. Major marine invertebrate groups
  2. Marine fishes
  3. Marine reptiles
  4. Marine birds
  5. Marine mammals
8. Human influences on the marine environment
  1. Ocean resources
  2. Changes in marine ecosystems
  3. Current conservation issues
9. Scientific method and biological investigation

## Lab Content

1. Laboratory exercises will emphasize identification and ecology of marine organisms:
  1. Photosynthetic organisms
    1. Phytoplankton
    2. Macroalgae
    3. Vascular plants
  2. Marine animals
    1. Major marine invertebrate groups

2. Major marine vertebrate group
2. Proper use of laboratory tools will be demonstrated and practiced:
  1. Compound microscope
  2. Dissecting scope
  3. Spectrophotometer
  4. Dissecting equipment
  5. Use of identification keys
3. Field work may include:
  1. Methods for collecting data on abiotic factors
  2. Methods for collecting invertebrate animals
  3. Observation of vertebrates within their environment
  4. Use of field guides
  5. Use of binoculars

## Recommended Course Content

### Recommended Course Content

No Value

### Recommended Lab Content

No Value

## Distance Education (DE) Addendum

Is this course being proposed for Distance Education? If so, select Yes below from the list in the dropdown and complete the questions. If no, select No and skip all questions.

- Yes

Modality Type:

- Hybrid
- Online (ECO)

Methods of Instruction:

- Asynchronous Discussion
- Viewing and Listening to Videos
- Online Activities
- Written Assignments
- Reading Course Materials
- Field Trips
- Collaborative Peer/Group Activities
- Group Meetings/Review Sessions (hybrid only)
- Interactive Activities
- Synchronous Discussion
- Facilitated Discussions
- Quizzes, Exams, and Surveys
- Multimedia Presentations
- On-campus Orientation Sessions (hybrid only)
- Other-Describe in box below

If Other is selected for Methods of Instruction, please describe:

Lab kits may be used. Lab simulation software may be used.

Describe how the methods of instruction selected above will allow students to meet the course's learning outcomes:

The course information can be covered asynchronously through recorded videos with closed captioning or through synchronous lectures using video conference technology. The instructor will use the school's learning management system to administer written assignments, reading materials, discussions, class activities, and quizzes/exams for formative and summative assessment. Discussions will be used in the online modality to provide a non-traditional assignment to provide equity for students. Field trips may take place in person in the hybrid modality, and may be virtual in the online modality. In the hybrid modality, labs may take place on campus with face to face instruction. In the online modality, laboratory activities may include a combination of labs based on computer simulation, interactive online activities, photographs of models, written activities to reinforce concepts introduced in lecture, data analysis based on pre-recorded measurements, and lab kits that provide students with the materials to complete essential lab skills at home.

Describe how the methods selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric:

<https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/>)

Instructor created curriculum in the form of written assignments and evaluations will follow OEI guidelines for heading styles, lists, links and images. The campus learning management system Accessibility Checker Tool will be used when creating online content for students. Heading styles will be used to make navigation of material easy for students and accessible for screen readers. Lists will use the bullet tool instead of being developed manually, images will have robust captions, tables will be formatted according to accessibility, and hyperlinks will be defined properly. All videos will have closed captions that are high quality, consistent, and meet the needs of deaf and hard of hearing audiences. Lab simulations will have accessibility options.

Regular and Effective Contact (REC) Methods and Examples: Select the methods below that ensure regular effective contact (REC) will take place among students and among students and faculty (Title 5 §55204) by being initiated by the instructor, regular and frequent, and meaningful or of an academic nature. Select the methods of REC that may be used:

No Value

REC Among students: How will students interact with each other in the course? What methods will be used? Check all that apply.

- Discussion Boards
- Group Projects
- Q & A Discussion Boards

REC Among students and faculty: How will faculty interact with students in the course? What methods will be used? Check all that apply

- Announcements
- Assignment Feedback
- Discussion Boards
- Email
- Video Conferencing Technology (e.g. Zoom, MS Teams, etc...)
- Q & A Discussion Boards
- Office Hours
- The Online Course Syllabus

Other Methods of REC among students and among students and faculty. Please describe and provide example(s).

Video conferencing technology such as Zoom may be used for office hours, class meetings and synchronous discussions.

In hybrid or teleclass courses, describe what parts of the course are done face-to-face and what parts are done online.

A significant part of the class can be facilitated online through asynchronous course materials and assessments. Students can watch pre-recorded lectures, participate in discussion boards, take quizzes on lectures/reading assignments and even perform certain laboratories using simulation software or interactive online activities. Equipment-based laboratories will take place on campus. Exams will be administered face-to-face whenever possible to ensure academic integrity.

### Checkoff List

Does this proposal meet the five development criteria as stated in the CCCC Program and Course Approval Handbook (PCAH)?

Yes

Are library resources needed for this course?

Yes, I have contacted the Library representative to the Curriculum Committee.

Do you have any special concerns/needs or comments? If yes, describe.

No Value

Have you included documentation, if necessary, by uploading file(s) in the Cover Info tab? For example, advisory committee meeting minutes, C-ID descriptor, etc.)

No documentation is necessary

If this is a new course, have you attached the completed class capacity form, with required approvals, and uploaded the file in the Cover Info tab?

No, this is not a new course

If you are requesting Distance Education, did you complete the DE addendum tab?

Yes

If requesting transferability, have you completed the comparable courses field?

Yes

Add any additional comments you want reviewers to read.

No Value