

## BIO 125: MARINE BIOLOGY, Spring 2023

**Instructor: Dr. Michelle Paddack** Phone: (805) 965-0581 x2328 Email: mjpaddack@sbcc.edu

**Note:** We will use Canvas as a place to post many assignments, lab quizzes, etc.

This syllabus may change to adapt to the needs of our class - any changes will be posted in **Canvas** & announced in class – it is your responsibility to stay informed & engaged in class -check your pipeline email & Canvas daily.

<b>Week of:</b>	<b>LAB (EBS 210) Tue or Thurs 2:30-5:35</b>	<b>LECTURE (EBS 301) Tu &amp;Th 12:45-2:05pm</b>	<b>Reading Homework Castro Huber 11<sup>th</sup> ed. (10<sup>th</sup> ed in parentheses if pages differ from 11<sup>th</sup>)</b>
Jan 23	1. Classification & Algae (lab & Leadbetter Beach)	1: Course Intro; Ocean Environment; Algae (in lab) 2: Bio Basics; Phytoplankton	Ch 1: 8-15 Ch 3: 40-45; Ch 6 Ch 4: 64-76; Ch5: 93-100
Jan 30	2. Plankton (lab & docks) <i>Creature Feature Topics due</i>	3: Zooplankton; Pelagic Adaptations <b>Quiz 1</b> 4: Natural Selection & Evolution	Ch15: 343-355(336-352) Ch 4: 76-84
Feb 6	3. Docks; Bryozoans & Tunicates	5: Tunicates & Bryozoans Marine Reproduction 6: Sponges; Cnidarians	Ch 7: 148-152 (143-145) Ch 7: 117-125
Feb 13	4. Sponges & Cnidarians (lab)	<b>Quiz 2;</b> 7: Coral Reefs 8: Tides Intertidal Adaptations	Ch 14 (all) Ch 3: 57-62 Ch11: 252-269 (246-263)
Feb 20	5. <b>FIELD TRIP:</b> (Carpinteria) Rocky Intertidal Zones	9: Mangroves <b>EXAM 1 (lectures 1-9), labs 1-4</b>	Ch13: 287-294 (289-300)
Feb 27	6. Molluscs; CF 1 (Lab)	10: Molluscs I (snails) 11: Molluscs II (octopus, etc.)	Ch 7: 130-137(127-134) Ch 7: 130-137
Mar 6	7. <b>FIELD TRIP:</b> Carpinteria Salt Marsh	<b>Quiz 3;</b> 12: Estuaries 13: Soft sediment ecosystems & eeew Worms! ;)	Ch 12 (all) Ch 7: 125-130
Mar 13	8. <b>FIELD TRIP:</b> Marine Mammals (boat)	14: Chordates Marine Mammals 15: Marine Mammal Biology	Ch 7: 148-151 (143-145) Ch 9: 188-200 Ch 9: 200-214 (200-222)
Mar 20	9. <b>FIELD TRIP:</b> (Devereux) Rocky Intertidal Diversity	<b>Quiz 4;</b> 16: Marine Mammal Threats & Conservation 17: Marine Ecology	Ch 10 (all)
Mar 27	<i>Spring Break – Mar 27-31 -enjoy time to catch up &amp; relax!</i>		
Apr 3	10. Echinoderms & Arthropods; CF 2 (lab)	18: Echinoderms (urchins, etc.) 19: Arthropods (crabs, etc.)	Ch 7:143-147 Ch 7:137-143
Apr 10	11. Kelp Holdfasts (lab); CF 3	<b>EXAM 2 (lectures 10-19, labs 5-10)</b> 20: Kelp Forests	Ch 13: 300-9(298-305)
Apr 17	12. Sandy Beach (Leadbetter); CF 4	21: Sandy Beaches (lab); Marine Reptiles 22: Sea & Shore Birds	Ch 11: 270-274 Ch 9: 179-184 Ch 9: 184-188
Apr 24	13. Data analysis; CF 5	<b>Quiz 5;</b> 23: Climate Change 24: Intro to Fishes; Jawless Fishes	237-249 (233-245) Ch8: 153-158
May 1	14. Fishes (lab); CF 6 <b>Lab report due</b>	25: Cartilaginous Fishes 26: Bony Fishes	Ch8: 153-158 Ch8: 158-168

May 8	15. <b>Creature Features</b> & final review	<b>Quiz 6</b> ; 27: Fish Biology & Behavior	Ch8: 168-178
		28: Ocean Threats & Solutions	Ch 18: all
<b>Tues</b> <b>May 16</b>	<b>FINAL EXAM (cumulative)</b> <b>11-1 (note time!)</b>		

### **REQUIRED MATERIALS:**

**1. Textbook:** Marine Biology, by Castro & Hubert, 11<sup>th</sup> edition (earlier, later, or on-line versions may be used, but note that page numbers for readings may differ – you will need to be sure you are reading the correct sections). A copy will be available to read in the SBCC library.

**2. Lab Manual:** Paddock (2023) – this will be provided free via Canvas for you to print, or you can buy a printed one from the bookstore (which will be equal in cost to your personal printing cost).

### ***Highly Recommended:***

Dictionary of Word Roots & Combining Forms, Donald J. Borror  
ISBN-13: 978-0874840537 ISBN-10: 0874840538

The actual printed version is so helpful, almost every day I STILL use the one I had to buy when I was an undergraduate! Not as easy to use, but you can access a pdf version for free [here](#)

### **Welcome to Marine Biology!**

*This course satisfies SBCC general education requirement in Natural Sciences & is transferable to UC and CSU as a general education laboratory science course. This course does not apply toward the SBCC Biology major.*

This course is an introduction to the amazing world that awaits you just offshore. You will learn about the ocean as a habitat and the animals that live within it. This course serves non-science majors, but biology majors will also gain much from the material. My goal is to help you understand the basic principles of science and apply them toward understanding how organisms live in the ocean. Along the way, you may also discover a lifelong appreciation of biology and ecology and see how interesting the world is through the eyes of a scientist.

### **Course Objectives:**

The major course objective is to familiarize the student with marine plants, algae and animals, their basic structure, feeding habits, reproductive modes, and interactions with each other and their environment.

In lecture students will learn to:

1. Define the major ecological principles operating in marine communities.
2. Recognize marine plankton as the base of most marine food webs.
3. Identify the major groups of marine organisms.
4. Compare the major littoral habitats, the species of marine organisms commonly found in each one, and their adaptations to the habitat.

In lab students will learn to:

1. Recognize common littoral marine organisms of the West Coast of North America and understand the roles they play in specific marine ecosystems.
2. Specify the major marine physical and biological forces at work in littoral zones.

By the end of the course students will learn to identify the complex and diverse marine organisms, specify the ecological adaptations for their particular habitats, and recognize the marine ecosystem as a major life zone of Earth.

### **Student Learning Outcomes**

1. Diversity: List the nine major animal groups (phyla) and four major marine plant/algae groups (phyla) found in the oceans and explain the differences between them.

2. Ecology: Distinguish between marine and terrestrial systems using the major principles of ecology.
3. Lab: Identify common marine organisms from temperate inshore habitats including rocky shores and sandy beaches.

**GRADING** will be determined by the total percentage earned in the course. You must pass BOTH the lecture and lab portions of this class. There is one letter grade for this 4 unit class (lecture and lab together) which will be based upon your percentage of points earned out of a possible total points using the following scale. YOU MUST PASS BOTH THE LECTURE & LAB PORTIONS OF THIS CLASS IN ORDER TO RECEIVE A PASSING GRADE. To pass the lab portion, you cannot miss more than 2 labs.

A student who shows strong effort and/or improvement in the course may be bumped up into the next higher level at my discretion. Grades for each assignment will be posted in Canvas.

**Remember, Grades are earned, not given.**

A+: >95%	B+: 87-88%	C+: 77-79%	D+: 67-69%
A: 90-96%	B: 82-86%	C: 70-76%	D: 60-66%
A-: 89%	B-: 78-81%	F: <60%	

Points are earned as follows. **NOTE: 10% per day late will be deducted from grades for all late assignments**

Lecture Activities	Total Pts	% of grade
Quizzes (6 at 20 pts ea - drop lowest)	100	12%
Labs (15 at 15 pts ea)	225	28%
Creature Feature	135	17%
Exam 1	100	12%
Exam 2	100	12%
Exam 3 & Cumulative Final	150	18%

**Accommodations for Students with Disabilities:**

Disability Services and Programs for Students (DSPS) coordinates all academic accommodations for students with documented disabilities at Santa Barbara City College. If you have or think you might have a disability that impacts your educational experience in this class, contact DSPS to determine your eligibility for accommodations. Their phone number is [805-730-4164](tel:805-730-4164).

If you have already registered with DSPS, please submit your accommodation requests via the ***'DSPS Online Services Student Portal'*** as soon as possible. This needs to be done each semester. *If you have any questions or concerns about your accommodations, please make an appointment with a DSPS Counselor.*

Complete this process in a timely manner to allow adequate time to provide accommodations.

**YOUR ROLE IN THIS CLASS:**

Congratulations on taking the initiative to learn a fascinating subject! This will be a class that will have you interacting directly with the things we are studying, and with each other. I will try my best to teach you and give you a real feel for Marine Biology. Whether you ever take another biology class or not, I hope you will learn a lot about the ocean so that you will always have a deeper understanding and appreciation for it throughout your life. We will provide great tools for you to learn, but it is ultimately YOU who is responsible for your knowledge. If you need extra help, come to my office, or make an appointment. I am here for YOU and will work as hard as you do to help you succeed.

**Participation:** A key element of the sciences is to be inquisitive and interactive with your subject and your peers. Your participation is therefore an important part of your learning, and so is a part of your grade. All science classes build on the foundations laid in each lecture, so it is important that you ***do not get behind.***

Do not be afraid to ask questions or to seek help in understanding from your instructor or your peers – discussion & debate are important aspects of science. Because you are here to learn, come to class and be engaged! If you

don't understand something, it is most likely that someone else in the class shares your confusion. The easiest way to resolve your misunderstanding is to speak up. If you have any suggestions or comments about my lectures, the text, or other material related to the class please feel free to speak to me so that we can make this class the best learning environment possible.

### **Course Communication & Materials:**

**Class website:** Course materials will be posted on your Canvas site. This will be THE resource for you during this course – visit it frequently!!

If you have not already done so, log into and familiarize yourself with Pipeline. I communicate with you via Pipeline email and Canvas announcement, so you check your school email (Pipeline) regularly for updates, reminders, or schedule changes. Best to get the Canvas app on your phone & turn notifications on.

To log into Pipeline: Go to the SBCC homepage ([www.sbcc.edu](http://www.sbcc.edu)) and click on "Pipeline". On the upper bar, click on the 'Canvas' button – in Canvas, click on BIOL-100.

If you have difficulty accessing or using Pipeline, contact the Online Help Desk at [online@sbcc.edu](mailto:online@sbcc.edu) (805 965-0581 x2949) or visit the Cyber Center.

**Study Guides** will be posted in Canvas after each lecture. These will include images of any slides shown during class and a list of questions (posted as a Googledoc that you can download). Although these questions will not be graded, I advise you to treat them like homework and set 2-3 hours aside after each lecture to answer the questions. This will keep you on top of the material and allow you to be sure you understand. If you are unable to answer a question, ask for clarification in the next lecture or come to office hours or the tutor. Lecture quizzes and exams will consist only of these questions (though they may be worded differently).

### **Notebooks and organization**

Making a reliable record of observations and events is an essential skill in science, as well as most other professions. Taking notes is an important skill. Scientific studies have proven that we learn more by hand-writing notes. Be sure to have a notebook dedicated for this course to include notes you take during lecture and from your readings. Many drawings, figures, and anecdotes that I present in lecture will not appear in the posted lecture notes (and this is intentional!), but this material will figure prominently on exams and quizzes. Although I will not directly grade your personal notebooks and organization of lecture notes (though I may for extra credit!), these are critical for success – you will not perform highly if you are unorganized.

**Quizzes:** Quizzes will occur in lecture and will include both lecture & lab material.

**Exams:** You will have 2 midterms and a final. Your final You must take all exams in order to pass this class.

**Make-up exams and quizzes will ONLY be given in cases of documented emergencies.**

### **ASSIGNMENTS:**

**READING HOMEWORK:** Text readings will support the lecture material. To help you understand, interact, and ask questions, reading assignments for each class should be read **BEFORE** lecture.

Readings support the class material but additional material WILL be presented in lectures.

**CREATURE FEATURE** : Details will be provided via Canvas, but here is a brief overview:

- An in-depth, formal presentation on biology and/or ecology research of a particular marine organism.
- Your presentation will occur in your lab at an assigned date during the semester. You must select your organism & date of presentation by Week 2 - only one student can write on each topic so sign up early.
- You will use published scientific studies and other credible scientific sources to research your organism.
- You will have a choice on which lab to present your creature feature in from a subset of the labs.
- **10 days prior to your presentation**, you must submit an outline & annotated bibliography of your research so far, including at least 4 credible scientific sources.
- You will present your work to your lab as an oral 8 minute presentation. This will provide you with valuable presentation skills as well as allow you to hear about each other's research.

**LAB:** There are weekly hands-on labs for this class. This is your chance to put your learning into practice and to interact with marine life first-hand. You are required to bring your printed lab to each lab. You may buy your lab manual from the bookstore, or print them out yourself. You must pass both the lecture and lab in order to pass this class. If you miss more than 2 labs, you may be dropped from the class.

**EXTRA CREDIT** opportunities may be offered throughout the semester. These are an opportunity to engage in marine science within your community, to see the relevance of what you are learning. Do not rely on extra credit as a way to pass the class.

### Study Tips

**The key to getting a great grade is the amount and quality of work that you put into this class.**

**I will do everything I can to help you in this course, but your grade is ultimately up to you.**

- The very best way to study is to attempt to teach the material to someone else. Listening to and understanding information is *completely different* than being able to reproduce it or use it under pressure without your notes!
- Budget into your schedule at least *3 hours* of study and reading time for every 1 hour of lecture time. That's a *minimum* of 7 hours every week, exclusive of exam and lab preparation!
- Read the assigned material casually *before* lecture, and then very carefully read the relevant sections a second time after the lecture. If you don't understand something at that point, ask me.
- Take notes on your post-lecture reading, and incorporate these notes into your lecture notes. Re-write all your notes, cleaning up and re-organizing them as you do.
- Write tests for yourself to *evaluate* and *use* the material; take your tests later to practice doing well on exams.
- Join or form a study group. You're more likely to study if it's scheduled and others are depending on you. Plus, in a study group, you have people to whom you can teach the material. (See first bullet point.)

**Your success:** I want you to do well in this course. Please email or come see me if you have any questions or problems with the course, assignments, anything to do with your experience here at SBCC, or if you just want to chat. It is my job to help you succeed. If I am not able to help you, I will try to put you in touch with someone who can. Also, don't think that you should wait until a problem arises to come see me or talk to me. Come anytime, no question is too small – students that attend class regularly and keep an open line of communication with the instructor typically perform better in the course. You should take advantage of opportunities to talk with your professors – we're here to help you learn!

### Academic Honesty

Academic dishonesty (including plagiarism) will not be tolerated in this course. SBCC has a strict policy on academic honesty, and I have zero tolerance for any act of academic dishonesty. Academic dishonesty includes but is not limited to: (1) Cheating on an exam or quiz (e.g. looking at or copying from somebody else's exam, talking during an exam, using cell phones or texting, bringing prepared "cheat sheets", using translators or dictionaries); (2) Copying someone else's work or answers in worksheets, lab exercises, etc. (3) Plagiarism (failing to properly cite material produced by others, or intentionally turning in work that is characterized as one's own).

**All work submitted must be your own.**