

# OCEA 80A: Life in the Sea

Katlin Bowman, PhD  
Summer 2022

## COURSE INFORMATION

**Course design:** This is an online, asynchronous course with no scheduled meeting times. Asynchronous work will be completed in [Connect](#) and lecture videos posted in [Canvas](#) can be watched at any time.

**Course description:** Life in the Sea focuses on the ecology of plants and animals in the open-ocean and coastal environments. In this course we will review basic oceanography and biology, then focus on marine life from single-cellular plankton to blue whales. You will learn the evolutionary history of life in the ocean, understand how to classify marine animals, explore various marine habitats and ecosystems, and discuss the threats of climate change and marine pollution. High school biology and chemistry courses are recommended prior to taking this course.

## INSTRUCTOR INFORMATION

Katlin Bowman, PhD  
Pronouns: she/her  
[klbowman@ucsc.edu](mailto:klbowman@ucsc.edu)

**Instructor Biography:** Dr. Bowman has a B.S. and Ph.D in Environmental Sciences from Wright State University (Dayton, Ohio). She has worked in the Ocean Sciences Department at UCSC since 2015 as a researcher and lecturer. Her research expertise is mercury biogeochemistry. She has spent nearly a year of her life at sea on expeditions in the Atlantic, Pacific, and Arctic Oceans. Dr. Bowman is a [National Geographic Explorer](#) and is currently working on research projects investigating the impact of plastic pollution in the ocean.

## LEARNING OUTCOMES

### Learning objectives:

- Use the theory of plate tectonics to describe seafloor features.
- Explain how the ocean stores and transports heat.
- List the major and minor constituents of seawater.
- Explain the role of microbial life in controlling concentrations of dissolved oxygen and carbon dioxide gases in the upper ocean, and in recycling nutrients.
- Identify physical processes that control the movement of water in the surface and deep ocean.
- Outline the evolution of life in the ocean, from simple cells to marine mammals.
- List unique adaptations found in marine organisms that enable their survival in harsh ocean environments.
- Describe the reproductive strategies of sessile and mobile marine organisms.
- Describe major ocean algae and plankton organisms.
- Organize marine animals into phyla, and describe their body structure, feeding mode, reproductive strategy, and habitat.
- Describe the symbiotic relationships between animals, and outline food webs in several benthic and pelagic habitats.
- Explain the biogeochemical cycling of carbon, nitrogen, and phosphorus in marine environments.
- List common ocean resources, and classify them as nonrenewable or sustainable.
- Identify sources of marine pollution and describe how elevated levels of atmospheric carbon dioxide influence seawater pH.
- Discuss the effects of climate change on marine ecosystems.

### Student Learning Outcomes:

- Demonstrate a basic understanding of the physical ocean, including features of the seafloor, layers of the water column, and the movement of surface and deep ocean currents.
- Apply knowledge of the physical ocean to explain the distribution of primary producers in the euphotic zone.
- Relate the circulation of dissolved gases and nutrients in the ocean to microbial life.
- Use physical and lifestyle characteristics to classify marine animals by phylum.
- Explain adaptations and lifestyle characteristics of marine organisms.
- Differentiate zones within benthic and pelagic habitats and characterize key primary producers and food webs within these regions.
- Evaluate the impact of climate change on marine life.

## REQUIRED MATERIALS, TEXTBOOKS AND TECHNOLOGY

- **Connect:** The textbook for this course is accompanied by a learning management platform called Connect, which is required for this course. Access to Connect costs ~\$72 and includes a digital copy of the textbook. To access Connect, [click on a Connect assignment](#) (i.e., “Chps. 1-2 SmartBook) on the course page in Canvas. This will open a new tab where you will see three options:
  - Option 1: Purchase access to Connect using a credit card or PayPal (this option gives you access to an electronic copy of the textbook).
  - Option 2: Enter your 20-digit Connect access code. Use this option if you purchased a new, hardcopy of the textbook (you will still have access to the electronic textbook using this option).
  - Option 3: Register for 14-day free access. Use this option if you purchased a new, hardcopy of the textbook and are still waiting for your copy to ship.  
NOTE: You must use your UCSC email address to create the trial account in order for your grades to sync with Canvas when your Connect code arrives.
- **Textbook Information:** Marine Biology, 11th Edition w/Connect Code (ISBN: 978-1-259-88003-2).
- **Canvas:** This course is hosted on [Canvas](#). You do not need to sign up for an account, login with your CruzID and Gold Password at [canvas.ucsc.edu](https://canvas.ucsc.edu). See [Canvas Getting Started Student Guide](#).
- **Google Docs:** Weekly lab assignments will be completed using Google Docs. These assignments are provided through Canvas and can be stored in your [Google Drive](#), which is accessible through your UCSC email account.
- **YouTube:** Lecture videos are hosted on YouTube and require an internet connection to view.
- **Zoom:** Optional office hours for this class will be held on [Zoom](#).

## COMMUNICATION

During this session we will communicate primarily through Canvas announcements and Zoom office hours, with some email communication. Please sign up for [Canvas notifications](#) and check your email frequently to stay informed.

Post general questions on the “ASK Questions Here” discussion board in Canvas. General questions include

- questions about course material (i.e. What is the difference between prokaryotic and eukaryotic cells?),
- course navigation (i.e., Where do I find the group project discussion board?),
- due dates, course schedule, etc.

These are questions likely shared by other students in the course; posting responses on a public discussion board gives you answers faster that can be shared with the whole class. I will respond to discussion board questions within 24 hours M-F.

Private inquiries (i.e., missing class due to family emergencies, DESP services, grade concerns) should be made through email only ([klbowman@ucsc.edu](mailto:klbowman@ucsc.edu)) and not posted on discussion boards. I will respond to emails within 24 hours M-F and generally do not respond on the weekends.

### **Office Hours with Katlin**

Wednesdays from 7:00-8:00 PM on Zoom

(<https://ucsc.zoom.us/j/94785503620?pwd=K2V2YmJpU0lhUGZBZGRKVUtWdEhCUT09>), the password to join is “bluewhale” or by appointment (scheduled through email)

## **ASSIGNMENTS & ASSESSMENT**

Introduction to new material in this course comes from textbook reading assignments, SmartBook practice assignments, and video lectures.

- Each week you are assigned to read 2-4 chapters from your textbook.
- After or during your readings, you must complete SmartBook assignments in Connect. SmartBook assignments are low-stakes reading quizzes, designed to improve your understanding of the text. If you get a problem incorrect you will not lose points, and instead will be assigned additional questions on the same concept to try again. Points are awarded for completing SmartBook assignments (not for correct answers).
  - Each SmartBook assignment is worth 10 points.
  - Time estimates for each SmartBook assignment are listed in Connect.
- Each week includes several video lectures on topics covered in the readings. Videos are 3-15 minutes in length and can be watched at any time.

Initial assessments include lab assignments, discussions posts, and quizzes in Connect.

- Each week you will complete 2-3 lab assignments to challenge your understanding of new material. Lab assignments include calculations, examination of real oceanographic data, online simulations, and animal classification. Lab assignments are provided as Google Docs and submitted through Canvas.
  - Each lab assignment is worth 5-20 points.
- Each week you will respond to prompts in a Canvas discussion board. The prompts are designed to expand your thinking of course topics by discussing the material in a

real world context. You will address the prompts in a short post, and then complete a guided response to at least two other student's posts.

- Each discussion post is worth 15 points.
- Points are awarded for thoughtful/complete posts (10 pts) and engaging response to peers (5 pts).
- Every module contains 1 quiz that you will take in Connect. It is recommended that you complete reading and SmartBook assignments, and watch video lectures before taking the quiz. You may use your notes and textbook while taking the quizzes.
  - Each Module exit quiz in Connect is worth 20 points.
  - Quizzes contain 10-15 questions.

Final assessments are Canvas exams.

- Two exams will be taken in Canvas for this course (the second exam is NOT a comprehensive final exam). Exams will include mostly multiple choice questions, with some short answers, fill in the blank, and essay questions. Exams are timed (2.5 hours to complete), you may use your notes and textbooks, but you must work alone. An online review activity will be provided to help you prepare for each exam.
  - Each exam is worth 150 points.

## **GRADING POLICY**

**If you miss an assignment or due date, you must communicate with your instructor within 24-48 hours to turn in late work.**

- Points will be deducted (-10% per day) for late assignments including SmartBook assignments, Connect quizzes, lab assignments, and discussion posts. Assignments are designed to help you prepare for exams; if the exam covering material from a missed assignment has passed, that assignment can no longer be turned in.
- Make-up exams are only available under extenuating circumstances. Send Katlin an email ([klbowman@ucsc.edu](mailto:klbowman@ucsc.edu)) to arrange for a make-up exam. If you forget to take an exam, you will NOT be given a make-up exam and will receive a 0. Enter important due dates in a calendar or planner at the beginning of the session to stay on track.

## Points breakdown and due dates

Assignment	Number of assignments	Due dates	Weight	Total points
SmartBook Assignments	10 (10 points each)	Assigned weekly, due Sunday nights by 11:59 PM	14%	100
Module Exit/Connect Quizzes	5 (20 points each)	Assigned weekly, due Sunday nights by 11:59 PM	14%	100
Lab Assignments	13 (5-15 points each)	Assigned weekly, due Sunday nights by 11:59 PM	18%	125
Discussion posts	5 (15 points each)	Wednesdays (Post) & Sundays (Responses)	11%	75
Exams	2 (150 points each)	Exam 1: July 10 Exam 2: July 22	43%	300
<b>Total</b>				<b>700</b>

## Course Grading Ranges

100–97 = A+	76.9–73 = C
96.9–93 = A	72.9–70 = C-
92.9–90 = A-	69.9–67 = D+
89.9–87 = B+	66.9–63 = D
86.9–83 = B	62.9–60 = D-
82.9–80 = B-	<60 = F
79.9–77 = C+	

## INSTRUCTOR FEEDBACK

Grades for this course can be viewed at any time in Canvas. Points for SmartBook assignments and Connect quizzes will update automatically in Canvas. Feedback on worksheets can be viewed in Canvas within 1 week of submission. Multiple choice questions on Canvas exams will be graded automatically (you will see your score for these questions when you submit your exam). Short-answer and essay questions will be graded by your instructor and/or teaching assistant within 48 hours of submission. Feedback on these questions will be posted in Canvas as comments. [Please click here to learn how to access instructor feedback in Canvas.](#)

## STUDENT FEEDBACK

At the end of the session you will be asked to complete a Student Experience of Teaching survey for this course. SETs provide an opportunity for you to give valuable feedback on your learning that is honest and constructive. This anonymous feedback will help me consider modifications to the course that will help future students learn more effectively.

## COURSE SCHEDULE

Week	Reading topics	Important dates
One	Module 1: Introduction to the ocean (Chps. 1-3)	Module 1 due Sunday June 26 by 11:59 PM, last day to drop June 27
Two	Module 2: Biology basics, plankton, and plants (Chps. 4-6)	Module 2 due Sunday July 3 by 11:59 PM
Three	Module 3: Marine animals and ecology (Chps. 7-10)	Module 3 and <b>Exam 1</b> due Sunday July 10 by 11:59 PM, last day to request a “W” grade July 10
Four	Module 4: Benthic habitats (Chps. 11-14)	Module 4 due Sunday July 17 by 11:59 PM
Five	Module 5: Pelagic habitats and human impacts on the ocean (Chps. 15-18)	Module 5 and <b>Exam 2</b> due Friday July 22 by 11:59 PM

## ACADEMIC INTEGRITY

All members of the UCSC community benefit from an environment of trust, honesty, fairness, respect, and responsibility. You are expected to present your own work and acknowledge the work of others in order to preserve the integrity of scholarship.

Academic integrity includes:

- Following exam rules
- Using only permitted materials during an exam
- Viewing exam materials only when permitted by your instructor
- Keeping what you know about an exam to yourself
- Incorporating proper citation of all sources of information
- Submitting your own original work

Academic misconduct includes, but is not limited to, the following:

- Disclosing exam content during or after you have taken an exam
- Accessing exam materials without permission
- Copying/purchasing any material from another student, or from another source, that is submitted for grading as your own
- Plagiarism, including use of Internet material without proper citation
- Using cell phones or other electronics to obtain outside information during an exam without explicit permission from the instructor
- Submitting your own work in one class that was completed for another class (self-plagiarism) without prior permission from the instructor.
- Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Misconduct](#) page at the [Division of Undergraduate Education](#).

## ACCESSIBILITY

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by email, preferably within the first two weeks of the quarter. At this time, I would like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact the DRC by phone at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

You can find further examples of accessibility and inclusivity statements in [CITL's Sample Syllabus Language](#).

## RELIGIOUS ACCOMMODATION

UC Santa Cruz welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. The instructor will review the



situation in an effort to provide a reasonable accommodation without penalty. You should first discuss the conflict and your requested accommodation with your instructor early in the term. You or your instructor may also seek assistance from the [Dean of Students office](#).

## **PRINCIPLES OF COMMUNITY**

The University of California, Santa Cruz expressly prohibits students from engaging in conduct constituting unlawful discrimination, harassment or bias... [More here](#). I am committed to providing an atmosphere for learning that respects diversity and supports inclusivity. We need to work together to build this community of learning. I ask all members of this class to:

- be open to and interested in the views of others
- consider the possibility that your views may change over the course of the term
- be aware that this course asks you to reconsider some “common sense” notions you may hold
- honor the unique life experiences of your colleagues
- appreciate the opportunity that we have to learn from each other
- listen to each other’s opinions and communicate in a respectful manner
- keep confidential discussions that the community has of a personal (or professional) nature
- ground your comments in the texts we are studying. Refer frequently to the texts and make them the focus of your questions, comments, and arguments. This is the single most effective way to ensure respectful discussion and to create a space where we are all learning together.

## **TITLE IX/CARE ADVISORY**

UC Santa Cruz is committed to providing a safe learning environment that is free of all forms of gender discrimination and sexual harassment, which are explicitly prohibited under Title IX. If you have experienced any form of sexual harassment, sexual assault, domestic violence, dating violence, or stalking, know that you are not alone. The Title IX Office, the Campus Advocacy, Resources & Education (CARE) office, and Counseling & Psychological Services (CAPS) are all resources that you can rely on for support.

Please be aware that if you tell me about a situation involving Title IX misconduct, I am required to share this information with the Title IX Coordinator. This reporting responsibility also applies to course TAs and tutors (as well to all UCSC employees who are not designated as “confidential” employees, which is a special designation granted to counselors and CARE advocates). Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. The goal is to make sure that you are aware of the range of options available to you and that you have access to the resources you need.

Confidential resources are available through [CARE](#). Confidentiality means CARE advocates will not share any information with Title IX, the police, parents, or anyone else without explicit permission. CARE advocates are trained to support you in understanding your rights and options, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more. You can contact CARE at (831) 502-2273 or [care@ucsc.edu](mailto:care@ucsc.edu).

In addition to CARE, these resources are available to you:

- If you need help figuring out what resources you or someone else might need, visit the [Sexual Violence Prevention & Response \(SAFE\) website](#), which provides information and resources for different situations.
- [Counseling & Psychological Services \(CAPS\)](#) can provide confidential counseling support. Call them at (831) 459-2628.
- You can also report gender discrimination and sexual harassment and violence directly to the University's [Title IX Office](#), by calling (831) 459-2462 or by using their [online reporting tool](#).
- Reports to law enforcement can be made to the UC Police Department, (831) 459-2231 ext. 1.
- For emergencies, call 911.

## DIFFICULT CONVERSATIONS

In our in-class and online discussions and dialogues, we will have the opportunity to explore challenging, high-stakes issues and increase our understanding of different perspectives. Our conversations may not always be easy. We sometimes will make mistakes in our speaking and our listening. Sometimes we will need patience or courage or imagination or any number of qualities in combination to engage our texts, our classmates, and our own ideas and experiences. We will always need respect for others. Thus, an important aim of our classroom interactions will be for us to increase our facility with difficult conversations that arise inside issues of social justice, politics, economics, morality, religion, and other issues where reasonable people often hold diverse perspectives. This effort will ultimately deepen our understanding and allow us to make the most of being in a community with people of many backgrounds, experiences, and positions.

## STUDENT SERVICES

### [Counseling and Psychological Services](#)

Many students at UCSC face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

### [Student Success and Engagement Hub](#)

The Division of Student Success provides campus-wide coordination and leadership for student success programs and activities across departments, divisions, the colleges, and administrative units.

### [Tutoring](#) and Learning Support

At Learning Support Services (LSS), undergraduate students build a strong foundation for success and cultivate a sense of belonging in our Community of Learners. LSS partners with faculty and staff to advance educational equity by designing inclusive learning environments in Modified Supplemental Instruction, Small Group Tutoring, and Writing Support. When students fully engage in our programs, they gain transformative experiences that empower them at the university and beyond.

### [Slug Support Program](#)

College can be a challenging time for students and during times of stress it is not always easy to find the help you need. Slug Support can give help with everything from basic needs (housing, food, or financial insecurity) to getting the technology you need during remote instruction.

To get started with SLUG Support, please contact the [Dean of Students](#) Office at 831-459-4446 or you may send us an email at [deanofstudents@ucsc.edu](mailto:deanofstudents@ucsc.edu).

### Slug Help/[Technology](#)

The ITS Support Center is your single point of contact for all issues, problems or questions related to technology services and computing at UC Santa Cruz. To get technological help, simply email [help@ucsc.edu](mailto:help@ucsc.edu).

### On-Campus Emergency Contacts

Slug Help/[Emergency Services](#). For all other help and support, including the health center and emergency services, start [here](#). Always dial 9-1-1 in the case of an emergency.