

Lower division course
Taught once at the University of California, Berkeley

IB 108: Marine Biology

Summer 2019

COURSE INSTRUCTOR

Camilla Souto, Ph.D. – csouto@berkeley.edu

Lectures and Discussion: 10h/week

COURSE DESCRIPTION AND GOALS

This course will focus on the interactions among marine organisms and on their relationship to the environment. Topics will include an overview of marine organisms, functioning of marine ecosystems, anthropogenic impacts and conservation. This 4-credit course includes 8h of lecture and 4h of discussion per week. Lectures will consist of oral presentation, discussions of primary literature, activities, videos and student presentations; and discussion sessions will include videos and discussion of the material covered in lecture. By the end of the course you should be able to (1) compare marine ecosystems; (2) identify the major marine organisms and explain aspects of their natural history; (3) explain the main abiotic factors affecting the distributions of marine organisms; and (4) discuss the impacts that humans are imposing on the marine environment and conservation strategies. Along with introducing you to the diversity and evolution of marine organisms and ecosystems, my goal is also (5) to develop your written and oral communication skills. I also hope you will teach and learn from one another, especially when studying course materials.

ASSIGNMENTS AND GRADING

Midterm I	60
Midterm II	60
Final	60
Oral presentation	25
Individual project	35
Bay Area marine ecosystems report	35
Participation and worksheets	<u>25</u>
TOTAL	300

Exams: two midterms and one final exam. Each exam will consist of multiple-choice, short answers, labeling and matching questions, and one comprehensive essay question. **The exams will draw on information presented in lectures and discussion sections (including oral presentations).** Exam dates are noted on the course syllabus.

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Oral presentation: each student will be responsible for an oral presentation/mini-lecture about marine organisms. The goal of the oral presentations is to improve your oral communication skills and to provide an enriching opportunity for your peers, who will learn new material from you. Presentations may use any technology source available in the classroom (e.g. chalkboard, multimedia projector, audio system). I strongly recommend that you show me a brainstorm, a half-baked or your final presentation in advance so I can provide feedback. You should also seek guidance from your peers.

Individual project: each student will develop a project about anthropogenic impacts. The goal of the individual projects is to stimulate your creativity and improve your educational skills. It will also be an enriching opportunity for your peers, who will learn new material from you. Individual projects may consist of oral presentations, class activities, videos prepared by you, article discussion, demonstrations and/or other ideas you have. You should bring an outline of your individual project on **Monday, July 29th** to get a round of feedback from me and your peers, but you are encouraged to talk about your ideas with me and your peers before that.

Bay Area marine ecosystems report: we will make two fieldtrips to analyze various marine ecosystems across the San Francisco Bay. You will then write a report comparing the physical and biology characteristics of the marine ecosystems we visit. Reports should contain at least 1,200 words.

Participation and worksheets: Participation includes attendance and engaging in discussions of course material, helping your peers understand the content presented, sharing news related to the course in the classroom. Worksheets will be answered in class, usually as a group.

COURSE POLICIES

Attendance and use of electronic devices: I promise to do my very best to help you learn the material in this course. I expect you to come to class punctually, rested, prepared, eager to learn, and to pay attention in class. For the best outcome, this requires us both to stay focused on learning. You may bring your laptop computer, but please be respectful to other students by using it only for taking notes or investigating material directly related to the lecture. Fellow students will be distracted if they see you texting, shopping on Amazon, playing games, engaging in social media or email, or working on a different class. While you may think *you* can multitask, scientific studies have shown that students engaging in this behavior have reduced comprehension and receive lower scores on tests. Also, you are not only penalizing yourself, but your peers who are in direct view of your behavior also score lower on tests (Sana, F., T. Weston, and N.J. Cepeda. 2013. Laptop multitasking hinders classroom learning for both users and nearby peers. *Computers and Education* 62:24–31).

Grades will be determined by the percentage of the total points received in the course; there are 300 points: A = $\geq 90\%$; B = 80%–89%; C = 70%–79%; D = 60%–69%; F = $< 60\%$. Notice that grading is NOT based on a “curve”, so your grade will be a result of your own merit and you are NOT competing with other students.

Office hours: I encourage you to make use of our office hours. The amount of information introduced in this course makes it easy to get behind. If you even begin to feel overwhelmed, do not hesitate to get help.

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Make-up exams: make-up midterm are given at the discretion of the instructor and will be given only under the following conditions — (1) exceptional circumstances prevent your attendance, for example a sudden hospitalization (subject to verification); (2) you have contacted me at least 48 hours before the exam is scheduled to begin with a reasonable justification (when you write, be prepared to state the problem and provide a phone number where you can be reached); (3) make-up examinations may consist of a different format such as an oral examination with me or a few essay questions, and it will be scheduled as soon as possible after the original examination date.

Re-grade policy: please feel comfortable to consult me if you believe the grading of your assignments was not fair. You will have **48h** after receiving the exam to request a regrade. Be ready to explain your reasoning.

Accommodations: Contact me as soon as possible if you need disability-related accommodations in this class or if you are a student athlete and expect to miss any lectures or discussion sections. If you are a DSP student, give me a Letter of Accommodation from the Disabled Students' Program office at the beginning of the course.

Inclusion statement: I embrace human diversity and will not tolerate any kind of prejudice in my class. Please be mindful, respect your peers and help me create a safe learning environment for all.

Academic integrity: academic dishonesty and plagiarism will not be tolerated. Please be honest and produce original work. The internet is a great source of information; however, you will learn nothing by copying and pasting such information on your assignments. You will find that paraphrasing helps you verify your understanding. Please review UC Berkeley's academic integrity policies at: <http://sa.berkeley.edu/conduct/integrity>.

TEXTBOOK AND ADDITIONAL RESOURCES

Castro, P. & Huber, M.E. 2019. **Marine Biology**. 11th ed. You may find a used copy of this book; new copies can be obtained at the UCB bookstore or online. The “Glossary of terms” and Appendices A and B are very helpful.

Skim the required reading before lecture so the terms and concepts will be somewhat familiar to you as you listen to the lecture. After the lecture, center your reading on the topics covered in lecture and discussion sections. If the material in the textbook is unrelated to the material covered in the lecture or study questions, then it is unlikely to appear on exams. READ SELECTIVELY and use your textbook as a reference to help you learn concepts, terms, and ideas introduced in other portions of the course. If you are having difficulty with lecture material, don't let new terms in the reading confuse you further; focus on lecture material first.

Additional resources

Beckman, D.W. 2013. **Marine Environmental Biology and Conservation**.

Garrison, T. & Ellis, R. 2016. **Oceanography: An Invitation for Marine Science**.

Harbo, R. 2011. **Whelks to Whales: Coastal Marine Life of the Pacific Northwest**.

Karleskint, G.; Turner, R.; Small, J.W. 2010. **Introduction to Marine Biology**.

Levinton, J.S. 2017. **Marine Biology: Function, Biodiversity, Ecology**. 5th ed.

bCourses will be your headquarters for announcements, supplemental readings, and more.

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WEEK	COURSE SCHEDULE AND CONTENT			
1	Mon, Jun 24 th	Introduction to Marine Biology	Ch. 1	
	Tues, Jun 25 th	Ocean as a habitat	Chs. 2–3	
	Wed, Jun 26 th	Life: origin, evolution, properties	Ch. 4	
	Thur, Jun 27 th	Viruses and marine microorganisms	Ch. 5	
Multicellular primary producers		Chs.5–6		
2	Mon, Jul 1 st	Primary productivity / Marine invertebrates	Ch. 7+bcourses	
	Tues, Jul 2 nd	Marine invertebrates	Ch. 7	
		Marine invertebrates	Ch. 7	
	Wed, Jul 3 rd	Marine invertebrates	Ch. 7	
Thur, Jul 4 th	HOLIDAY			
3	Mon, Jul 8 th	Marine vertebrates: fishes	Ch. 8	
	Tues, Jul 9 th	Marine vertebrates: fishes (2P)	Ch. 8	
		Marine vertebrates: amphibian, reptiles, birds (2P)	Ch. 9	
	Wed, Jul 10 th	Marine vertebrates: mammals (2P)	Ch. 9	
Thur, Jul 11 th	FIELDTRIP ROCKY/SANDY			
4	Mon, Jul 15 th	4 presentations; discuss invertebrate worksheet	Ch. 9	
	Tues, Jul 16 th	FIELDTRIP DOCKS/MUDDY		
	Wed, Jul 17 th	Midterm 1 (through Jul 15th)		
	Thur, Jul 18 th	Marine ecology	BP II.5, Ch. 10	
5	Mon, Jul 22 nd	Estuaries, salt marshes and mangroves	Ch. 12	
	Tues, Jul 23 rd	Intertidal ecology and zonation	BP I.7, Ch. 11	
	Wed, Jul 24 th	Subtidal communities	Ch. 13/BPII.6	
	Thur, Jul 25 th	The open sea (pelagic communities) + REPORT DUE	BP I.3, Ch. 15	
6	Mon, Jul 29 th	Project feedback (bring your project outline)		
	Tues, Jul 30 th	Polar seas	BP I.4, LCh 19	
	Wed, Jul 31 st	Midterm 2 (Jul 11th–30th)		
	Thur, Aug 1 st	The deep sea	BP II.2, Ch. 16	
7	Mon, Aug 5 th	Coral reefs	Ch. 14	
	Tues, Aug 6 th	Marine conservation; Invasive species and deep-sea mining (2P)	Ch.17-18, LCh. 20, BChs. 9, 12	
	Wed, Aug 7 th	Climate change and extinction (1P)	p. 237-249	
	Thur, Aug 8 th		LCh. 3	
		Marine pollution (2P)	Ch.18, LCh. 22	
8	Mon, Aug 12 th	Fisheries (2P)	Ch.17, LCh. 21	
	Tues, Aug 13 th	Our blue planet	BP II.7	
		Aquaculture / Urbanization / Entertain. Parks (3P)	Chs. 17–18	
	Wed, Aug 14 th	Prospects for the future (success stories)		
Thur, Aug 15 th	Q&A			
	Final examination (Aug 1st–14th)			

* BP, Blue Planet series; P, oral presentations; L, Levinton

* If you are using an older edition of the book, make sure you check the corresponding chapters and note that it may be outdated.

* Dates and topics are tentative!