SIO 132: Introduction to Marine Biology
Fall Quarter 2024

Course Instructors:

Dr. Ryan Hechinger, Scripps Institution of Oceanography
Office: Hubbs Hall 1155 Phone: 822-3788 email: rhechinger@ucsd.edu
Instructors' Office Hours: Directly after lecture

Dr. Dovi Kacev (He/Him/His), Scripps Institution of Oceanography
Office: Hubbs Hall 3130 Phone: 246-5277 email: dkacev@ucsd.edu
Instructors' Office Hours: Directly after lecture

Teaching Assistants (TAs will run your discussion sessions, and are your primary point of contact for course questions)

Katelyn Meyer – k1meyer@ucsd.edu
Ethan Staats – estaats@ucsd.edu
Isabel Flores – irflores@ucsd.edu

Course structure: Two lectures/week on T/Th, 9:30 am - 10:50 am in **Warren Lecture Hall 2005**
One mandatory discussion section meeting/week (see below)

Course Description: Marine biology is the scientific study of ocean life. It is broad because it includes all facets of biology, ranging from biochemistry, genetics, cell biology, physiology, development, behavior, ecology, and evolution. So, as a group, marine biologists study a very wide range of questions and employ a great range of techniques, including field sampling, field/laboratory experimentation, mathematical models, and bioinformatics analyses.

The goal of this course is to provide you with a foundational understanding of many facets of marine biology. We focus on three themes: (1) **organismal function**—how individual organisms physically 'solve problems' to permit them reproduce and survive; (2) **ecology**— the causes and consequences of the distribution, abundance, and diversity of organisms; and (3) **evolution**—patterns and processes concerning adaptive and non-adaptive change over time. These themes are tightly related; for instance, different marine environments pose different physical challenges that marine organisms have evolved to address in different functional ways. In addition to imparting a foundational understanding of marine biological facts and processes, we also have a goal that students gain a better understanding of the scientific methodology and reasoning underlying marine biology.

Lectures are important and it is **important to take notes**. We will post lecture slides on Canvas. However, the slides are not a substitute for attendance, as lectures include material that will not be on the lecture slides. **We expect you to attend lecture in person**, video podcasts are intended to be a supplement for in-person attendance, not a replacement. If you need to miss lecture please tell your TA (with an excusable reason) so that you can make up the clicker points (see below)

Lecture iClicker points: In each lecture we will use clicker questions to promote learning by creating more meaningful engagement in lecture (to help keep your brains tuned in). We use iClicker Cloud. **You must use** either the iClicker Cloud app on your smartphone or a traditional iClicker2 remote to answer questions. **See the supplemental iClicker Cloud Set up document** on the course Canvas Page and make sure you are set up **BEFORE THE FIRST CLASS**. If you need to miss class for **an excusable reason**, clicker points can acquired by contacting your TA. Our room uses iClicker frequency AB. Please review the information at https://edtech.ucsd.edu/instructional-tools/iclickers/index.html

Discussion Sections are mandatory (unless you are ill) and have an assignment that you must turn in through discussion threads on Canvas **by midnight before your section**. Before each session (except the first one), each of you should write in the appropriate discussion thread an ORIGINAL potential short-answer exam question (AND THE ANSWER) that is derived from the previous week's lecture or reading material. Each session will often start with a short, open, general question and answer period that will be followed by digging into your submitted questions. The TA will haphazardly select students, one after another, and they will present their question to the class, who will then discuss possible answers and critique the question. TAs will continue selecting students until end of the session time period. **You will be scored** for having turned in your question and attending the ENTIRE discussion section. By having you come up with questions, **we are encouraging you to actively and critically engage with the course material**. This will help you get more out of the course. We also often use the top questions in our exams!

If you have to miss discussion section for an **excusable reason**, please let your TA know ASAP. In such cases, you will make up your discussion participation by answering two of your classmates' questions in the week's discussion thread.

Discussion sections have been scheduled as follows (**you must attend YOUR session**):

Section	Day	Time	Location	TA
A01	M	1:00p-1:50p	HSS 2321	Katelyn Meyer
A02	M	2:00p-2:50p	HSS 2321	Katelyn Meyer
A03	W	2:00p-2:50p	CENTR 220	Ethan Staats
A04	W	3:00p-3:50p	CENTR 220	Ethan Staats
A05	F	1:00p-1:50p	HSS 1305	Isabel Flores
A06	F	2:00p-2:50p	HSS 1305	Isabel Flores

Textbook (required): J.S. Levinton (2022) Marine Biology (6th ed.). Oxford University Press hardcopy or via the "digital inclusive access" version. The text provides a wealth of background information for many lecture topics, and expands on some topics we only touch on in class. **We will also sometimes have you read book sections "as though we lectured on them."** Why should you read the other parts of the book? Well, if you use it well, it will help you learn the course material much better! It will help you switch from superficial passive to deeper, active, critical learning.

The textbook is also available on-line through RedShelf and linked on our Canvas page. All students are automatically signed up for the e-book, so if you do not want to pay for on-line access, please remember to **OPT OUT before October 6th (or as prompted)**.

Here are two recommendations for how to use the text. First, critically assess and compare the content in the text book readings to the content in our lecture. How are they similar? How do they differ? Do they relate to each other at all? Just doing this exercise will permit you to get much more out of the class than "lazily" reading through lecture and book material. By doing this, you will actually master course content and develop critical thinking skills. Second, we encourage you to physically interact with the book. Mark it up with your pen and your highlighter. Write notes in the margins, including questions. This is also part of active learning.

Additional course readings, consisting of primary literature, may be assigned in class or Canvas. We will provide you with citations (usually on the first slide of a lecture), and you will obtain the papers online or at the library. Go to the library webpage (http://libraries.ucsd.edu/spaces/computing/remote-access) for information on how to set yourself up to access literature on your own computer. Basic information from the readings may not be covered in lecture, but can be on exams. We will give you a generic, short list of questions for you to answer for every paper you read. All this is to help you develop solid scholarship skills; interacting with the scientific literature should become second nature (and fun!) for science majors, and is a useful skill for any informed citizen.

Canvas web site: We will post lecture slides, exam keys, and other course materials.

Grading:

Two midterm exams (short answer format)	
1st Midterm	= 100 points
2nd Midterm	= 100 points
Final exam has two parts:	
3rd Midterm	= 100 points
Cumulative Final	= 100 points
Clicker points	= 50 points
Discussion section	= 50 points
Total	= 500 points

Exams: There are two midterm exams that are held in person during the lecture timeslot. We have two midterms to give you a chance for early self-assessment (and early self-improvement!). A Final, which consists of material from the final third of the quarter (midterm 3) and a cumulative portion, will be held in person during finals week.

Test regrading policy: Requests for "regrades" must be submitted to TAs within one week of the exam return. Please attach a sheet, to your full exam, noting which questions you would like regraded, along with a brief justification. Only do this for what appear to be true grading errors. Also, note that ALL questions may be regraded during a regrade. Only exams written in non-erasable ink will be considered.

Social Integrity: This class and UCSD are an inclusive environment. We are dedicated to fostering respect for all people.

Public Health: Many of us learned a lot about respiratory infectious disease transmission in recent years. Let's be respectful of one another and take reasonable steps to reduce transmission of colds, flus, or Covid-19. If there's a good *chance* that you're infectious, but you are not sure, test negative, and feel pretty good and want to come to class or discussion—**wear a mask**. Of course, if you're fully symptomatic (e.g., spewing infectious particles, feverish) to test positive, **don't come to class or discussion**. Let us know and inform your TA concerning discussion sections, as you may be able to remotely attend a few of those. **We will automatically excuse 1 lecture and 1 discussion absence during the quarter** with no explanation required**.**

Similarly, if an instructor is sick, we will find a suitable replacement or will provide a remote lecture via Zoom or otherwise posted to Canvas in place of the in-person lecture.

Also, **please feel free, but not pressured, to wear a mask whenever you come to class;** it's certainly not overkill to do so—it *is* a relatively high risk of transmission environment and the "costs" of wearing a mask are pretty low for most of us. Instructors usually don't wear masks as it does interfere with giving a lecture. Similarly, if you choose not to wear a mask, please respect those who do.

Academic Integrity: Integrity of scholarship is essential for an academic community. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. All suspicions of integrity violation will be reported to the Academic Integrity Office according to university policy. Integrity violation is not just blatant cheating (e.g., copying off another student during an exam), but include copying other students' papers or homework, copying or using old papers/report, using another student's clicker in class, working with others on individual assignments. Those students found to have committed academic misconduct will face administrative sanctions imposed by their college Dean of Student Affairs and will also face consequences for this course, which may range in severity from an F on the exam or an F in the course. Students who assist in or are complicit

with cheating could also be in violation of the Policy. Thus, students who become aware of their peers either facilitating academic misconduct or committing it should report their suspicions to us for investigation. For more information on academic integrity please refer to The Policy on Integrity of Scholarship (academicintegrity.ucsd.edu). Any technological resources, including AI, should only be used with proper ethics and integrity.

Lecture schedule

Date	Lecture Topic (Instructor: K = Kacev, H = Hechinger)		Readings (in Levinton)*
26-Sep	(1)	Introduction: ocean environment and marine biology (K)	Ch. 1, 2
01-Oct	(2)	Physiological adaptations (K)	Ch. 5
03-Oct	(3)	Trophic modes & strategies (H)	Ch. 4, 12
08-Oct	(4)	Evolutionary adaptations (K)	Ch. 6
10-Oct	(5)	Marine microbial ecology (K)	Ch. 8, 11
15-Oct	(6)	Habitats: pelagic, open ocean, deep sea (H)	Ch. 8, 9, 10
17-Oct	(7)	Habitats: subtidal benthic habitats (H)	Ch. 15, 17, 18
22-Oct		**MIDTERM 1 (lectures 1–6)**	
24-Oct	(8)	Habitats: rocky intertidal zone, beaches, wetlands (H)	Ch. 16
29-Oct	(9)	Migration (K)	Ch. 10
31-Oct	(10)	Dispersal (K)	Ch. 7
05-Nov	(11)	Speciation (K)	
07-Nov	(12)	Reproduction; Life cycles; Life history theory (H)	Review Ch. 7
12-Nov	(13)	Colonies; Symbiosis; Cleaning; Mimicry (H)	Review Ch. 4
14-Nov		**MIDTERM 2 (lectures 7–12)**	
19-Nov	(14)	Community ecology (H)	Review Ch. 4
21-Nov	(15)	Global patterns of marine biodiversity (H)	Ch. 19, 20
26-Nov	(16)	History of life in the oceans (H)	
28-Nov		**Thanksgiving break**	
03-Dec	(17)	Fisheries, and Conservation (K)	Ch. 21
05-Dec	(18)	Marine Pollution (K)	Ch. 22
12-Dec		**MIDTERM 3 (lectures 13–18) & FINAL (cumulative):** Thursday 8:00am-10:59am	