

SIO 132: Introduction to Marine Biology
Fall Quarter 2020 (Time of Covid)

Course Instructors:

Dr. Ryan Hechinger (He/Him/His), Scripps Institution of Oceanography
Office: Hubbs Hall 1155 Phone: 822-3788 email: rhechinger@ucsd.edu
Instructors' Office Hours: by appointment (set up by email)

Dr. Dovi Kacev (He/Him/His), Scripps Institution of Oceanography
Office: Hubbs Hall 3130 Phone: 246-5277 email: dkacev@ucsd.edu
Instructors' Office Hours: T and Th 11am-12pm and by appointment in course Zoom
(set up by email, I will only remain logged into office hours as long as I know students are interested)

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

Anaí Novoa (She/Her/Hers): anovoa@ucsd.edu
Dan Metz (He/Him/His): dcmetz@ucsd.edu
Carl Whitesel (He/Him/His): cwhitese@ucsd.edu

Course structure: Two zoom lectures/week on T/Th, 9:30 am - 10:50 am (links provided via Canvas)

One mandatory zoom discussion section meeting/week (links in Canvas, 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 to 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 plan to do most or all lectures live, via zoom. We will post lecture slide pdfs on Canvas. However, the slides are not a good substitute for attendance, as lectures include material that will not be on the lecture slides. Lecture videos will be posted on Canvas (for 1 month) and are available for asynchronous learners.

Lecture clicker points: Each lecture will have “clicker point” questions. We use these to promote learning by creating more meaningful engagement in lecture (to help keep your brains tuned in). Because we cannot do live clicker point scoring, we will have you provide your answers to the clicker point questions in a weekly quiz available on Canvas (each week’s clicker points will equal every other week’s, regardless of the number of questions).

Discussion Section participation is **mandatory** and there is an assignment that you must turn in at the beginning of each class (again, via Canvas). **By midnight before each session** (barring the first), each of you should write on your discussion thread an ORIGINAL potential short-answer exam question (AND THE ANSWER) that is derived from the previous week’s lecture or reading material. Then, in each session, 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 or responding to two questions in the thread. 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 may use the top questions in our exams!

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

| <u>Section</u> | <u>Day</u> | <u>Time</u> | <u>Location</u> | <u>TA</u> |
|----------------|------------|---------------|-----------------|-----------|
| A01 | M | 10:00a-10:50a | Zoom | Dan |
| A02 | M | 11:00-11:50a | Zoom | Dan |
| A03 | T | 1:00p-1:50p | Zoom | Anaí |
| A04 | T | 2:00p-2:50p | Zoom | Anaí |
| A05 | F | 1:00p-1:50p | Zoom | Carl |
| A06 | F | 2:00p-2:50p | Zoom | Carl |

Statement of Remote Teaching for Fall Quarter

Having this course remotely is a new experience for us, as instructors, and you, as students. However, each professor has already taught remotely. We are sure that this course can work quite well with our zoom lectures and discussion sessions. We are committed to doing our best to provide an educational experience that will give you foundational skills to work as a marine biologist across several different disciplines.

Despite that, there will likely be some frustrations along the way. We commit to communicate with you as we navigate this new reality and appreciate if you communicate with us. Feel free to let us know (by communicating with your TA) what is working for you and what is frustrating. We cannot guarantee that we can fix the issues, but we can do our best to do so.

We also understand this quarter may include a myriad of additional stressors outside of the classroom. We are committed to support you through this quarter. We hope that you and your loved ones all manage to be safe and well through this crisis and understand that your health and wellness will be your primary concern.

We look forward to this journey with you all as we each figure out how to make distance education work best.

Textbook (required): J.S. Levinton (2017) Marine Biology (5th 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 learning.

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, 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 |

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. Note that regrades are primarily an opportunity to fix grading errors and that ALL questions may be regraded. 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.

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).

Students with disabilities requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter (paper or electronic) issued by the [Office for Students with Disabilities](#). **Students are required to discuss** accommodation arrangements with instructors and OSD liaisons in the department **in advance** of any exams or assignments.

Lecture schedule

| Date | Lecture Topic (Instructor: K = Kacev, H = Hechinger) | Readings (in Levinton)* |
|--------|--|-----------------------------------|
| 01-Oct | (1) Introduction: ocean environment and marine biology (K) | Ch. 1, Ch.3, and pp 12-20 |
| 06-Oct | (2) Physiological adaptations (K) | Ch. 5 |
| 08-Oct | (3) Evolutionary adaptations (K) | Ch. 5 |
| 13-Oct | (4) Marine microbial ecology (K) | Pp. 145-149, 156-157, and 211-217 |
| 15-Oct | (5) Trophic modes & strategies (H) | Pp. 46-53; 302-316 |
| 20-Oct | (6) Habitats: pelagic, open ocean, deep sea (H) | Chs. 8, 9, 10 |
| 22-Oct | (7) Habitats: subtidal benthic habitats (H) | Chs. 15, 17, 18 |
| 27-Oct | MIDTERM 1 (lectures 1–6) | |
| 29-Oct | (8) Habitats: tidal wetlands, beaches, rocky intertidal (H) | Ch. 16 |
| 03-Nov | (9) Dispersal (K) (Election Day) | Pp. 114-121 |
| 05-Nov | (10) Migration (K) | Pp. 124-139 |
| 10-Nov | (11) Speciation (K) | Pp. 66-73 |
| 12-Nov | (12) Life histories; Life cycles; Reproduction (H) | Ch. 7 |
| 17-Nov | (13) Sociality; Symbioses; Cleaning; Mimicry (H) | Ch. 4 (pp. 46-54) |
| 19-Nov | MIDTERM 2 (lectures 7–12) | |
| 24-Nov | (14) Community ecology (H) | Ch. 4 (pp. 54-65) |
| 26-Nov | (15) THANKSGIVING HOLIDAY | Ch. 20 |
| 01-Dec | (16) Global patterns of marine biodiversity (H) | |
| 03-Dec | (17) History of life in the oceans (H) | |
| 08-Dec | (18) Marine pollution (K) | Ch. 22 |
| 10-Dec | (19) Fisheries and Conservation (K) | Ch. 21 |
| 17-Dec | MIDTERM 3 (lectures 13–18) & FINAL (cumulative): Thursday 8:00am-11:00am | |

* Additional readings may be assigned in class