BIOL 388 SUNY GENESEO FALL 2020

Marine Biology

Syllabus

Course Description. Students in this course will dive into the biology of marine life, from tidepools to trenches. Course themes include the vast diversity of marine organisms, adaptations to distinct marine environments, and human impacts on marine systems. The course consists of lecture and a weekly two-hour lab. Students will also learn methods in marine research and conduct a literature review and presentation on a topic of their choosing. *Prerequisites: Biology Proficiency and BIOL 203.* Credits: 4(3-1). Course Format: Synchronous Online.

Course Meetings.

Lecture

Monday, Wednesday, Friday	9:30 – 10:20 am	*Online: Canvas*

Lab

Wednesday	1:30 – 3:30 pm	*Online: Canvas*

Instructor. Dr. Mackenzie Gerringer ISC 255 gerringer@geneseo.edu

Office Hours. Mon. 1:30–3:30 pm, Fri. 1:30–2:30 pm, and By Appointment

Office hours are your time for getting questions answered, course expectations clarified, advice on pursuing opportunities or careers in science and more! Office hours will be held on Zoom, accessible through our Canvas course page. Please email me (gerringer@geneseo.edu) or chat before/after class if you have questions or would like to set up a meeting outside of office hours.

Learning Outcomes.

During this course, we will:

- Explore the biodiversity of marine systems across broad taxonomic and habitat ranges.
- Understand adaptation into the marine environment at molecular, organismal, and community levels.
- Develop and practice strategies for reading and critiquing scientific journal articles.
- Engage in critical thinking and discussions about human impacts on marine systems.
- Research, synthesize, and present scientific information effectively through written and oral projects in the classroom and lab.

How this course fits into your biology education…

This course will help you work toward the following Biology Program Learning Outcomes:

- 1. Students will have the knowledge base and intellectual (conceptual) framework to use reasoning and problem-solving skills to; (1) read critically, (2) evaluate support for competing hypotheses, and (3) critique experimental design. Level: Reinforcement.
- 2. Students will have the laboratory and inquiry skills and technical ability to formulate hypotheses, design and run experiments using instruments to test their hypotheses, and analyze and interpret the results. They will be able to build on earlier work to design further experiments. Level: Introduction.
- 3. Students will be able to communicate biological ideas from literature or their own laboratory investigations to audiences of biologists and non-biologists in a variety of formats including written reports, poster and oral presentations. Level: Reinforcement.
- 4. Students will recognize the importance of scientific integrity and ethical research and applications of biology to science policy. They will be able to work independently and in teams for life-long learning. Level: Reinforcement.
- 5. Students will be able to demonstrate a broad and diverse background in biology and related sciences and a strong foundation for graduate and professional programs of study or employment. Level: Reinforcement.
- 6. Students will recognize evolution as the central tenet of biology, which explains the unity and diversity of life and interrelatedness of levels of biological organization. Level: Reinforcement.

Course Materials.

Textbook: *Marine Biology: Function, Biodiversity, Ecology*. Jeffrey Levinton, 5th Edition, 2017. Older editions may also be used. RedShelf offers a digital rental of the text for $60. Corresponding readings for lecture topics are provided in the schedule.

Scientific Papers. We will also explore current research in marine biology. These readings are available on Canvas. Article response worksheets will help you develop strategies for reading scientific papers. Please submit these article responses for three of the four readings. For one reading, we will have a mini-journal club to discuss the studies, questions we come across, and what we'd do next to advance the field.

Course Technology. Additional materials will always be available on Canvas for those looking to dive deeper into these topics. We have discussion threads for questions about the course, material, or research opportunities. If you see internship opportunities or neat marine science news, please share! We will also be learning and using some common tools for accessing and analyzing marine data, including R. All software will be freely available to download, with links provided on Canvas.

Course Expectations.

Much of the value of this course will come from our in-class activities and discussions. Therefore, online attendance is expected when possible and active participation will be part of your course grade. If you cannot join a synchronous class session, please plan on participating in our discussions on Canvas and/or completing an alternative reading and response. Please reach out to me to discuss potential or needed extended absences. The earlier you get in touch about questions or concerns, the more options we will have.

Assignments & Grading.

Course grades will be based on participation in class, reading responses, projects, lab activities, and exams, designed to be inclusive for different learning styles and help you track your progress. Assignment summaries are included below, with further assignment details and rubrics provided on Canvas and in class throughout the semester. Please feel free to reach out if there are questions about grading policies and course expectations. Course scores total 300 points.

Article Responses *15% of course grade*

Four scientific journal articles will supplement our textbook reading. For three of these, write a short response on the worksheet provided *(10 points each)*. For one other article, meet with the instructor in groups of three for a short (~15 min) journal club discussion on the reading *(15 points)*.

Choy *et al.* 2017	Sept. 11th
Breitburg *et al.* 2018	Sept. 25th
Nakaya *et al.* 2020	Oct. 9th
Davis *et al.* 2020	Oct. 30th

Topic Presentation *15% of course grade*

Prepare a talk on a topic in marine biology that excites you. Submit a topic proposal *(10 points)* and a presentation outline *(10 points)* for feedback. Talks will be given in class, 11/2–11/6 *(25 points)*. Slides are due via Canvas at 9 am on 11/2.

Topic Proposal	Sept. 18th	*10 points*
Presentation Outline	Oct. 23rd	*10 points*
Topic Presentation	Nov. 2nd	*25 points*

Human Impacts Poster *10% of course grade*

How will you share your marine science expertise beyond the classroom? Create an eye-catching, informative poster to communicate one human impact on marine systems to a public audience. Alternatively, you may communicate an example of bioinspiration from the marine realm. You may work individually or in pairs. For individuals, please cite three scientific sources, for pairs, use six sources *(30 points)*.

Optional Topic Check	Nov. 11th	
Human Impacts Poster	Nov. 23rd	*30 points*

Lab *20% of course grade*

For our first month, each lab will have a corresponding worksheet with questions to synthesize the material (*5 points each*). Lab worksheets are due the following Wednesday at 5 pm.

Lab Activity 1	Sept. 9th	*5 points*
Lab Activity 2	Sept. 16th	*5 points*
Lab Activity 3	Sept. 23rd	*5 points*
Lab Activity 4	Oct. 2nd	*5 points*

For our remaining labs, we will conduct an original research project in marine biology. We will work collaboratively, and rely on the contributions of everyone to complete the research. Each individual will be graded on their research contribution (*10 points*), a figure you generate from our data (*10 points*), and your contribution to our lab research paper. Further details on expectations will be provided as the project progresses. This is an opportunity for us to do real marine science together this semester.

Research Contribution	Nov. 18th	*10 points*
Research Figure	Dec. 2nd	*10 points*
Lab Research Paper	Dec. 9th	*20 points*

Exams *30% of course grade*

Exams will cover the material presented in class and the text-book to track our progress and synthesize our understanding. *Mid-Term, 15%.* The mid-term exam will be held on Monday, October 14th (*40 pts*). You will have a choice of format for the mid-term exam: oral or written. Both formats will be closed-book. *Final, 15%.* The final exam will an open-book synthesis of our course material and will be due on Friday, December 18th, 3:30–6:00 pm *(50 pts)*. We will have open review sessions in class before each exam.

Mid-Term Exam	Oct. 14th	*40 points*
Final Exam	Dec. 18th	*50 points*

Participation Every Class *10% of course grade*

Earn full participation credit by engaging with in class activities and discussions *(30 points)*. Asking questions, sharing your insights during class discussions, engaging with lab activities, and posting on Canvas discussions are all ways to actively participate in this course.

Resources & Policies.

Course Policies. *Late assignments* and make-up assignments will be accepted only with extenuating circumstances. If you have an emergency or foresee a scheduling conflict on an assignment exam, please contact me as soon as possible and we'll work something out on a case-by-case basis.

Marine Science Resources. Further readings, activities, career and internship opportunities will be available on the Canvas page. Please check the course page for these resources and do not hesitate to reach out if you have questions about the material or want to know more about a topic.

Useful Links for Marine Science.

Review of Latitude & Longitude: https://www.thoughtco.com/latitude-and-longitude-1433521
Real-Time Visualization of Winds and Currents: https://earth.nullschool.net/
National Data Buoy Center Resources: http://www.vos.noaa.gov/mwl.shtml
The Argo Float Network: http://www.aoml.noaa.gov/phod/argo/how_argo_works.php
NOAA *Okeanos Explorer* Live Feed https://oceanexplorer.noaa.gov/livestreams/welcome.html
Ocean Networks Canada, Data and Resources: http://www.oceannetworks.ca/
Ocean Observatories Initiative: https://oceanobservatories.org/
Hawaii Ocean Time Series, 30 years of Oceanographic Data: http://hahana.soest.hawaii.edu/hot/
Understanding Climate Change: http://www.realclimate.org/
https://data.giss.nasa.gov/gistemp/news/

Geneseo Mission and Values. SUNY Geneseo has several core documents that articulate our shared commitments and learning objectives. These include:

- SUNY Geneseo Mission, Vision and Values: https://www.geneseo.edu/about/mission-vision-and-values
- Community Commitment to Diversity, Equity, and Inclusion: https://www.geneseo.edu/diversity/commitment
- Geneseo Learning Outcomes for Baccalaureate Education: https://www.geneseo.edu/provost/globe-geneseo-learning-outcomes-baccalaureate-education

Academic Support Services. The campus provides a range of support services to help students thrive in their classes. These services include: Tutoring, both drop-in and by-appointment, with student

tutors in the Writing Learning Center, the Math Learning Center, and a range of department-based tutoring centers

- Online tutoring through the SUNY-wide STAR-NY system (www.starny.org/tutoring_schedule)
- Supplemental Instruction, in which trained student assistants review lecture material from specific classes. Information on times and locations is available through the Center for Academic Excellence website at https://www.geneseo.edu/academic-support-services.

Additionally, the college offers a number of peer mentoring programs that are designed to reinforce good academic habits. These include:

- Academic Peer Mentors in the Office of Academic Planning and Advising provide students with promising study strategies and can host on-going appointments with students seeking an "accountability buddy". More information is available at: https://www.geneseo.edu/dean_office/academic-peer-mentors-0.
- The ONYX Academic Success workshop series sponsored by the GOLD Leadership Program introduces students to a variety of study skills, time management techniques, and instruction on how to access campus resources for academic and career guidance. A full list of GOLD workshops can be accessed at https://www.geneseo.edu/gold/app/browse.
- Tutoring, both drop-in and by-appointment, with student tutors in the Writing Learning Center, the Math Learning Center, and a range of department-based tutoring centers

Library Research Help. Geneseo's Library staff has created online research guides, self-help databases, and are available for individual consultation. Research Librarians are available for walk-in consultations and students may request appointments with staff experts in particular fields. Full information on library research resources, hours, and consultation options is available at www.geneseo.edu/library/ask-us. Students, faculty, and staff will be able to schedule research consultations with librarians via Zoom or another medium, using the same link as in past semesters: geneseo.edu/library/researchconsultations In lieu of in-person drop-in hours, the librarians are staffing LibChat, a service that allows for online, chat-based synchronous communication. LibChat is available Mondays–Fridays. Access it by clicking on the green owl icon, which is located throughout the library website. While electronic resources will continue to be accessible, Milne's physical collection will have limited access. Faculty, staff, and students are encouraged to use IDS to borrow materials from other libraries. For information about IDS and library services as a whole, see geneseo.edu/library/library-service-information The librarian for our course is Dr. Jonathan Grunert, grunert@geneseo.edu.

Academic Integrity and Plagiarism. The library offers frequent workshops to help students understand how to paraphrase, quote, and cite outside sources properly. With your Topic Proposal submission, you'll be asked to complete the Avoiding Plagiarism Tutorial on Canvas to help clarify expectations. These sessions are meant to educate about the importance of using original ideas and language, and how to incorporate paraphrases and quotes into writing. The complete list of library workshops can be found at www.geneseo.edu/library/library-workshops.

Academic dishonesty includes cheating, knowingly providing false information, plagiarizing, and any other form of academic misrepresentation, including self-plagiarism. Academic dishonesty will not be tolerated in this course. College policies and procedures regarding academic dishonesty are available at www.geneseo.edu/handbook/academic-dishonesty-policy.

Computer and Technology Support. To help reduce the spread of COVID-19, the CIT HelpDesk will not be available for walk-in appointments this fall semester. Contact us at 585-245-5588 and our HelpDesk technicians will help you over the phone or schedule a follow-up appointment if necessary. Individuals looking to borrow equipment such as video adapters, cameras, projectors, and laptops will be able to do so from the Library Service Desk.

Getting Help from CIT. For the fastest response to technical questions or issues, please call the CIT HelpDesk at 585-245-5588. If you are unable to reach us by phone, please leave a voicemail, and we will follow up within one business day. You can also submit a ticket through the CIT Service Desk Portal. If you prefer, for non-critical issues, you may also submit a ticket via email at helpdesk@geneseo.edu.

For assistance with your computer or mobile device, visit the CIT HelpDesk in Fraser. CIT provides self help guides on a range of computer issues, including access to the campus network, Canvas, printing, software guides, and other resources. The CIT Self Help Guides at wiki.geneseo.edu/display/cit/CIT+Self+Help can be helpful in finding quick solutions to basic technology issues.

Geneseo students, faculty and staff have FREE access to the entire LinkedIn Learning training library (over 7,500 courses, including tutorials for software, digital tools, web development, programming, and design) through Geneseo's site license. For more information, visit this wiki page. (https://wiki.geneseo.edu/display/cit/LinkedIn+Learning+Training+Library)

Course Accessibility. SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities, as well as medical conditions related to pregnancy or parenting. Students with letters of accommodation should submit a letter to each faculty member at the beginning of the semester and discuss specific arrangements. Please contact the Office of Accessibility Services for questions related to access and accommodations.

Office of Accessibility Services
Erwin Hall 22
(585) 245-5112
access@geneseo.edu
www.geneseo.edu/accessibility-office

All course materials are available on Canvas and I've made every attempt to ensure that they are accessible to everyone. If you have difficulties accessing any materials (including needs for alternative formats), please let me know as soon as possible and I will rectify the situation.

Attendance at "Live" or "Synchronous" Online Sessions. Accessing course materials online may be challenging—we've all experienced things like unforeseen emergencies and internet disruptions. Although this course centers on "live" or synchronous course activities, we can all be understanding about the challenges posed by the COVID-19 pandemic and the limits of technology. If you miss a synchronous session, please let me know as soon as possible so that we can discuss ways to keep you on track. If you are experiencing longer-term disruptions, please be proactive in communicating with me and contact the Dean of Students if you expect to be out for an extended period of time.

Getting Help with Online Classes. CIT has developed a number of resources that can help you formulate good strategies for success in online courses. These include general strategies for keeping on track with your courses as well as more specific resources about learning experiences that you may encounter in an online course. The Office of the Dean for Academic Planning and Advising has also introduced the new KOALA (Knights' Online Academic Learning Assistance) course support resource. Throughout the semester, if you need help with online learning strategies, you can contact the KOALA support desk, which will assist you with identifying resources and strategies for success.

CIT also provides a range of technology support resources. When you are in Canvas, the Help menu on the left side of the screen will also direct you to a number of CIT supports, including self-help resources and options to request technology assistance.

Religious Observations and Class Attendance. Student attendance in classes on religious holidays is governed by New York State Education Law 224-a (see https://www.geneseo.edu/apca/classroom-policies). Students who anticipate an absence due to religious observations should contact their faculty member as soon as possible in advance to arrange make up plans.

Bias-Related Incidents. "We are here to listen, to learn, to teach, to debate, to change, to grow. We should all be safe to pursue these goals at SUNY Geneseo while being who we are. Together, we commit ourselves to pluralism, cultivating a community that respects difference and promotes a sense of inclusion and belonging."

As this excerpt from our Community Commitment to Diversity, Equity, and Inclusion states, here at SUNY Geneseo, we want to provide a space where everyone feels welcome to learn and grow in their identities as well as in their role as students, faculty, and staff. If in the unfortunate instance you experience an incident of bias, we encourage you to reach out to the Chief Diversity Officer (routenberg@geneseo.edu) and/or our University Police Department. In trying to create an environment that facilitates growth through diverse thoughts and ideas, reporting incidents of bias—including threats, vandalism, and microaggressive behaviors—can help bring a better understanding of our campus climate as well as provide opportunities for learning and restoring harm. Hateful speech or actions will not be tolerated in our class.

Student Well-Being is a priority in this class, to support the achievement of academic goals and alleviate stress. Eating nutritious foods, getting enough sleep, exercising, avoiding drugs and alcohol, maintaining healthy relationships, and building in time to relax all help promote a healthy lifestyle and general well-being. Concerns about academic performance, health situations, family health and wellness (including the loss of a loved one), interpersonal relationships and commitments, and other

factors can contribute to stress. Students are strongly encouraged to communicate their needs to faculty and staff and seek support if they are experiencing unmanageable stress or are having difficulties with daily functioning. Please feel free to reach out to me if you have questions or concerns. The Dean of Students (585-245-5706) can also assist and provide direction to appropriate campus resources. For more information, see www.geneseo.edu/dean_students.

Mental Health Resources. As a student, you may experience a range of challenges that can impact your mental health and thus impact your learning; common examples include increased anxiety, shifts in mood, strained relationships, difficulties related to substance use, trouble concentrating, and lack of motivation, among many others. These experiences may reduce your ability to participate fully in daily activities and affect your academic performance.

SUNY Geneseo offers free, confidential counseling for students through the Lauderdale Center for Student Health and Counseling, and seeking support for your mental health can be key to your success at college. You can learn more about the various mental health services available at health.geneseo.edu.

Health and Wellbeing in a Stressful Time. The changes brought on by COVID-19 have impacted us all in a number of ways, and will continue to do so at various times and to varying degrees during the upcoming semester. Your health and wellbeing are foundational to your ability to learn, and if you find that you are feeling unwell (physically or mentally) and it is impacting your ability to complete your coursework, please reach out. Because the learning environment will be different than it has been in the past, the indicators that usually let you know something is wrong may not be as clear to you or those around you as they would be during a typical semester. Additionally, the ways in which you normally engage in self-care may have been disrupted. Please remember that it's never too late to ask for help. The Dean of Students (585-245-5706) can assist and provide direction to appropriate campus resources. The college also has collected resources in a Coping with COVID webpage.

In a similar way, I may occasionally ask for some patience and flexibility on your part. The pandemic is affecting faculty as well as students and creating demands that would not be present in an ordinary semester. You will never suffer any disadvantage in the course because of delays on my part. Remember that we are all in this together.

Parents. Students who are parenting will be supported in this class. I ask that all students work with me to create a welcoming environment that is respectful to all forms of diversity, including diversity in parenting status. All exclusively breastfeeding babies are welcome in our class sessions as often as is necessary. For older children and babies, I understand that unforeseen disruptions in childcare and pandemic-related changes often put parents in the position of having to miss class to care for a child. While not a long-term childcare solution, occasionally bringing a child to class to cover gaps in child care is perfectly acceptable. If babies and children come to class, I ask that you be mindful of your video and microphone on Zoom to avoid disrupting learning for other students. Finally, I understand that often the largest barrier to completing your coursework as a parent is the tiredness many parents feel in the evening once children have gone to sleep. While I maintain the same high expectations for all students in my classes regardless of parenting status, I am happy to problem-solve with you in a way that makes you feel supported as you strive for school-parenting balance.

Food Security. SUNY Geneseo students who find themselves in a position of food insecurity and do not have the financial resources to support their food and nutrition needs can access the Geneseo Groveland Food Pantry located at the First Presbyterian Church, 31 Center Street in Geneseo. Students can utilize the pantry once with no referral or contact with the College. At this visit they will be provided items that will address their basic needs for several days. If a student continues to face difficulties providing for their own nutritional needs beyond their first visit to the pantry they should connect with Susan Romano, Director of Financial Aid to receive a brief letter that they will present to the staff at the pantry that verifies their need. If students do not have a FAFSA on file for any reason they should contact Dr. Leonard Sancilio, Dean of Students, to discuss their particular situation and options. The Geneseo Groveland Food Pantry is open on the following days and times:

Tuesday: 10 AM–2 PM
Wednesday: 4 PM–6:30 PM
Thursday: 10 AM–2 PM

If you have any questions please contact Dr. Leonard Sancilio, Dean of Students at: sancilio@geneseo.edu or 585-245-5706.

US Election Day. Please note that Tuesday, November 3rd is Election Day in the US. Due to the pandemic, mail-in voting is the safest way for you to vote in the 2020 election. Most states already have mail-in voting in place, without a need for an excuse (or COVID-19 is an acceptable excuse). Visit vote.gov to register and for further information.

BIOL 388: MARINE BIOLOGY

SCHEDULE

Week 1: Our Blue Planet

Aug. 31	Welcome to Marine Biology	*Ch. 1: 1–11*
Sept. 2	The Oceans	*Ch. 2: 12–17*
Sept. 2	Lab 1: Our Blue Planet	
Sept. 4	Properties of Seawater	

Week 2: Oceanography

Sept. 7	*Labor Day, No Classes*	
Sept. 9	Currents, Waves, & Tides	*Ch. 2: 21–32*
Sept. 9	Lab 2: Winds & Waves	
	Due: Lab 1 Activity	
Sept. 11	A Brief History of Marine Biology	
	Due: Article Response: Choy *et al.* 2017	

Week 3: Marine Research

Sept. 14	Methods of Marine Research	
Sept. 16	Marine Ecology	*Ch. 4: 46–73*
Sept. 16	Lab 3: Oceanography in R	
	Due: Lab 2 Activity	
Sept. 18	Productivity & Food Webs	*Ch. 12: 239–254*
	Due: Talk Topic Proposal	

Week 4: Changing Oceans

Sept. 21	Climate Change	*IPCC Report for Policy Makers*
Sept. 23	Changing Oceans	*Ch. 3: 33–45*
Sept. 23	Lab 4: Climate Change & Ocean Acidification	
	Due: Lab 3 Activity	
Sept. 25	Discussion: Climate Change & Ecoanxiety	

Due: Article Response: Breitburg *et al.* 2018

Week 5: Marine Organisms

Sept. 28	Marine Microbes	*Ch. 8: 145–149, Ch. 13: 256–267*
	Guest Speaker: Dr. Logan Peoples	
Sept. 30	*No Classes*	
Oct. 2	Marine Zooplankton	*Ch. 8: 149–158*
	Due: Lab 4 Activity	

Week 6: Marine Organisms

Oct. 5	Marine Invertebrates	*Ch. 9: 159–161; Ch. 14: 268–295*
Oct. 7	Marine Fishes	*Ch. 9: 161–171*
Oct. 7	Lab 5: Introduction to Our Class Research Project	
Oct. 9	Mammals, Birds, & Reptiles	*Ch. 9: 171–188*

Due: Article Response: Nakaya *et al.* 2020

Week 7: Marine Habitats

Oct. 12	Mid-Term Review	
Oct. 14	Mid-Term Exam	
Oct. 14	Lab: Class Research Projects	
Oct. 16	Benthic Ecology	*Ch. 15: 297–316*
	Mid-Term Evaluations	

Week 8: Marine Habitats

Oct. 19	Pelagic Ecology	*Ch. 10: 189–196; 201–210*
Oct. 21	The Intertidal	*Ch. 16: 317–341*
Oct. 21	Lab: Class Research Projects	
Oct. 23	Coral Reefs	*Ch. 17: 382–408*
	Due: Topic Presentation Outline	

Week 9: Marine Habitats

Oct. 26	Seagrasses, Kelp Forests, Mangroves	*Ch. 16: 341–364; Ch. 17: 365–382*
Oct. 28	The Deep Sea	*Ch. 18: 409–433*
Oct. 28	Lab: Class Research Projects	

Oct. 30	Polar Seas	*Ch. 19: 434–444*
	Guest Speaker: Dr. Amanda Ziegler	
	Due: Article Response: Davis *et al.* 2020	

Week 10: Topic Presentations

Nov. 2	Topic Presentations	
	Due: All Topic Presentation Slides	
Nov. 4	Topic Presentations	
Nov. 4	Lab: Class Research Project	
Nov. 6	Topic Presentations	

Week 11: Marine Life Cycles

Nov. 9	Reproduction in the Ocean	*Ch. 7: 109–126*
Nov. 11	Life History & Growth	*Ch. 7: 126–144*
	Optional: Human Impacts Poster Topic	
Nov. 11	Lab: Class Research Project	
Nov. 13	Movement of Marine Organisms	*Ch. 10: 197–201*

Week 12: Human Impacts on the Marine Environment

Nov. 16	Human Impacts	*Ch. 22: 504–529*
Nov. 18	Marine Biodiversity	*Ch. 20: 445–470*
Nov. 18	Lab: Data Analysis for Class Research Project	
Nov. 20	Marine Conservation	*Ch. 21: 471–502*

Week 13: Review & Check-In

Nov. 23	Review & Check-In	
	Due: Human Impacts Posters	
Nov. 25–27	*Thanksgiving Break – No Classes*	

Week 14: Marine Physiology

Nov. 30	Salinity & Oxygen	*Ch. 5: 86–92*
Dec. 2	Temperature & Pressure	*Ch. 5: 74–85*
Dec. 2	Lab: Our Research Paper: Writing Workshop	
	Due: Research Project Figure	

Dec. 4	Light & Vision	*Ch. 5: 92–97*

Week 15: Life in a Fluid Medium

Dec. 7	Fluid Dynamics & Marine Organisms	*Ch. 6: 98–101*
Dec. 9	Life in a Fluid Medium	*Ch. 6: 101–108*
Dec. 9	Lab: Wrap-Up on Class Research Project Due: Lab Research Paper	
Dec. 11	Sound in the Sea	

Week 16: Putting it Together

Dec. 14	Putting it Together: Final Review	
Dec. 18	Due: Final Exam	