



Course BIOL106OL: Marine Biology

Course Syllabus

Course Description

This course surveys life in the oceans, from coastal ecosystems such as coral reefs and kelp forests to the expansive open ocean. Students will devise ways to use the scientific method as it relates to the sea to discover marine processes, organisms, and ecosystems. The course surveys microscopic plankton, marine invertebrates, fish and marine mammals as well as the ecological principles that determine their distribution. Finally, the course examines the impact of human life on ocean life today.

Course Outcomes

Upon satisfactory completion of this course, you will be able to:

1. Demonstrate knowledge of diverse marine ecosystems around the world
2. Communicate the uniqueness of life and processes in the marine environment
3. Develop scientific literacy, including strategies for review and evaluation of the primary literature
4. Utilize the scientific method and laboratory techniques to explore questions and issues related to marine ecosystems
5. Assess the issues concerning the world's oceans and marine life
6. Evaluate how the oceans and their creatures declare the glory of God through amazing diversity and wonder

Course Materials

Required Material(s)

Students must purchase:

Marine Biology, 11th Edition. Castro, P and ME Huber. McGraw Hill Education, 2016. ISBN 978-1-259-88003-2. (a 2018 ebook might be available through your Jessup login)

All other required materials are provided as PDFs or links in the Course Materials folder. See the weekly schedule for more complete information on course readings.

Recommended (but not required) Additional Reading

Earle, S. A. (2014). *Blue Hope: Exploring and Caring for Earth's Magnificent Ocean*. United States: National Geographic. ISBN#978-1426213953.

Class Policies

You are expected to read all assigned readings, view all lecture videos, screencasts, and access any links posted by the professor. Be prepared to discuss the contents of each.

Attendance and Participation

Because online courses require significant interaction between students, you must upload a current photo of yourself to your Moodle profile. The image should be a headshot with your face clearly visible (no pets, group photos, or cartoons).

You are not required to be online at the same times as your classmates. However, you should check in regularly (to access new materials, submit assignments, and/or participate in ongoing threaded discussions).

Each course week includes a threaded discussion focusing on topics related to the course. The discussions are a great place to ask questions, clarify issues, and share insights. You must check in regularly and contribute to the ongoing conversation, posting on the number of required days.

See the Online Discussion Guidelines for more details.

Any student who has not logged in for course participation during the first week will be administratively dropped along with any subsequent courses in the term.

Note: If you are off campus for any Jessup-sponsored extracurricular activity, you are still required to maintain and follow the due dates outlined in this syllabus. If you have an exceptional instance where internet access is not present either in your transportation and/or accommodations, you will need to have your supervising individual (professor, coach, etc.) inform your instructor to receive additional time on an assignment.

Netiquette

Netiquette, or the rules that surround good communication on the internet, is very important in online courses that are based on high levels of interaction and communication between students and professors at a distance.

Some basic rules to guide you in your online communication (see the Online Student Orientation for a longer, expanded list):

1. **Be thoughtful, kind and courteous in your communication.** Avoid language that may offend others and be cautious when using sarcastic language. In addition, respect your classmates' privacy by not asking them to share more than they would be comfortable doing.
2. **Proofread your writing so it is clear and easy to read.** Avoid acronyms (including text speak), do not use ALL CAPS, and do not overuse exclamation marks (use *italics* for emphasis). Write in short paragraphs and use plenty of white space (extra space between paragraphs) as that makes text easier to read on a webpage.
3. **Engage with your classmates.** Make sure your writing communicates what you intend, ask clear questions of your peers and always be aware of your audience when you are writing in the online classroom.

Written Work Guidelines

Written work is graded for content, organization, style, grammar, and formatting. All papers are to be typed, proofread, spell-checked, double-spaced, and prepared in accordance with APA style and format. Basic formatting should be Times New Roman 12 with 1 inch margins. For help with APA formatting, see the APA Tab of the Course Resources Folder (located on the main page of the course in Moodle).

The Writing Center is available to all Jessup Online students for help with writing papers as well as APA formatting. You can contact them at writingcenter@jessup.edu or schedule a session through the WJU Student Services Scheduler.

Assignments

Submission Format

All assignments must be submitted as an attachment via Moodle no later than 11:59 PM (PST) the day the assignment is due. Unless otherwise specified, you should submit all papers as Microsoft Word documents (.doc or .docx files) via Moodle. Use the "How to Submit Pages Doc (Mac) to Turnitin" link on Moodle when uploading documents in Mac format.

Late assignments

Whether instructors accept late work or not is up to their discretion.

In the case that they do, late work may be penalized 10% of the possible points for the assignment for each day, or part thereof, that it is late. *Work may not be submitted more than a week late.*

If you face particular difficulty meeting a deadline, please contact the professor ahead of time to discuss any options.

NOTE: The professor is not obliged to accept any late work after the final day of the class session unless prior arrangements have been made.

Feedback and Grades

You can expect to receive written feedback and grades on each weekly assignment via Moodle within 72 hours of the due date for submission.

For larger assignments (research papers, projects, etc.), you can expect to receive feedback within a week.

Academic Integrity

The University Catalog states:

Academic integrity is an essential component of Christian higher education. Instances of plagiarism will not be treated lightly. If it is a student's first offence, the paper will simply receive a zero. The student may or may not have the option to re-write the assignment for half credit, according to the instructor's discretion. If evidence of plagiarism exists a second time the student will receive an academic dismissal, which can be appealed by the student.

Plagiarism includes:

- The intentional or unintentional representation of another's words or ideas as your own in an academic exercise.
- Using the "copy and paste" method to use text found on a Web site without giving credit to the source.
- Copying information from a source without proper citation and without use of quotation marks or block quotation formatting. If any words or ideas used do not represent your original words or ideas, you must distinguish them with quotation marks or an indented block quotation followed by the appropriate citation.
- Paraphrasing statements or paragraphs without proper citation or using someone else's ideas, data, language, and/or arguments without acknowledgement.
- Presenting work as your own that has been prepared in whole or part by someone other than you.
- Failure to properly cite statistics, data, or other sources of information in your paper.
- Resubmitting a paper that you have already turned in as an assignment for a different course (including a different section of the same course). While the paper may be considered your original work, resubmitting it is considered a form of plagiarism. Your assignments for every class should be unique and original for that course.

Student Complaints

For complete information about WJU and how to file a complaint as a student please see the Consumer Information section of the Jessup website.

If a distance education student who lives outside the state of California believes that the university's internal procedures have not adequately addressed concerns identified under the Program Integrity Rule, there is a link on the Jessup website with Student Complaint Information by State and Agency.

Discussion Forums

Discussion Forums are an integral part of every Jessup Online course. A high percentage of learning in an online environment comes through the dialogue that takes place in Discussion Forums. You should think about the

discussion questions in this class as an opportunity for you, your classmates, and your instructor to enter into an interesting conversation about what you are studying. Therefore, you are encouraged to jump into the discussion as often as you'd like. This ensures that everyone will benefit from a variety of opinions and insights on the topics at hand. In other words, your contribution is valuable and important! Since this is a conversation, it's also important that you read the *entire* forum; not only are your contributions important, but you'll find that your classmates' contributions are as well!

Substantive Posts

You must post **at least 3 substantive responses** each week. A substantive post is one that contributes something significant to the academic conversation using academic language (avoid "text speak" or other informal language in your discussion posts). To be substantive and earn full credit, a post should:

1. **Be of appropriate length** (initial = 250-400 words; secondary = 125-225 words).
2. **Engage with the course materials** (lecture, texts, videos, etc.) in such a way that it is evident that you have integrated the course content into your thinking.
3. **Demonstrate critical thinking skills.** In other words, your substantive posts should reflect that you have carefully considered the discussion question and have put effort into writing a response that makes a relevant contribution to the conversation.

Requirements

Since discussion questions are usually given a lot of weight in terms of the final course grade, there are also academic expectations. These are as follows.

You must be active in the discussion forum **at least 3 days per week**. This means that you must post a response on 3 of the 7 days each week of the course in order to receive full credit. Do not write all of your forum posts on one day – that eliminates the opportunity for dialogue with classmates.

NOTE: All Discussion due dates/times are for the Pacific Time Zone.

For weeks with one discussion question:

1. You must post your **initial response** to the question by **Wednesday @ 11:59 p.m.**
2. By **Sunday @ 11:59PM**, you must post (at minimum) **two secondary posts** (posts responding to your classmates' comments or to your instructor's prompts) for a **total of three posts**. All posts must be substantive to receive full credit.

For weeks with two or more discussion questions:

1. You must post your **initial response to DQ#1 by Wednesday @ 11:59 p.m.**
2. You must post your **initial response to DQ#2 by Friday @ 11:59 p.m.**
3. By **Sunday @ 11:59PM**, you must post (at minimum) **four secondary posts** (spread across both questions; responding to your classmates' comments or to your instructor's prompts) for a **total of six posts**. All posts must be substantive to receive full credit.

Grading (Discussion Questions)

You are encouraged to take part in the weekly dialogue as much as you would like. Your instructor will rate your discussion posts according to the following guidelines:

Initial posts = 0 – 4 points each

- Points can be deducted for posting late (after the stated deadline), and/or for your post not meeting the requirements for being substantive (see above).

Secondary posts = 0 – 3 points each

- Points can be deducted for your post not meeting the requirements for being substantive (see above).
- All secondary posts are due each week by Sunday night @ 11:59 p.m. No credit will be given for late discussion posts after this time.

Each discussion question is worth 10 points [4 pts. for your initial post; 3 pts. for each secondary post]. Therefore, for weeks with **one discussion question**, you can earn up to a total of **10 points**. For weeks with **two discussion questions**, you can earn up to **20 points**.

These totals will be accumulated throughout the week in your gradebook as your instructor rates your posts. Your **final grade** [0 – 10 or 20] for the entire week will be reflected in your gradebook **no later than Wednesday of the following week**.

Services for Students with Disabilities

In accordance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, WJU Disability Support Services office (DSS) provides eligible students with a variety of individualized, reasonable accommodations. These accommodations are intended to assist college students with disabilities in having equal access to regular college programs and activities. Accommodations are determined individually for each student through an interactive process and are based on functional limitations resulting from a documented disability. Recent (within 3 years), verifiable documentation must be provided by a medical doctor or appropriately licensed professional.

Approved accommodations will be provided for students who present instructor with a copy of their Faculty Notification Letter (issued by DSS).

For more information, please visit the Disability Support Services website.

Disability Support Services Contact Information:

WJU Disability Support Services
(916) 577-2253
dss@jessup.edu

Technology Requirements

Sufficient technology tools and Internet access are required when taking a course through Jessup Online. The following list will help ensure that you are adequately equipped.

Supported Operating Systems

- Windows 8 and Windows 10
- MacOS is supported for most online course materials

It is highly recommended that you have administrative rights to the computer used for your coursework. If you must use a computer over which you do not have administrative rights (such as a workplace computer), you may experience difficulties with needed functions, such as installing plug-ins. Check with your workplace IT department to ensure that you may access course materials from your company's network.

Productivity Tools

Microsoft Office (this software is available to students at deeply discounted pricing through Microsoft or JourneyEd.com.).

WJU Email Account

All students are provided with a WJU email address. It should be used for all course communication between you and your instructor. This will avoid issues with Spam blockers and other problems that may prevent you from receiving email from your instructors. Use of this email account will also enable you to participate in special student offers that are available only to students with an "edu" email address. You can access your Jessup e-mail account at my.jessup.edu.

Supported Browsers

- Google Chrome
- Mozilla Firefox

Browser Settings

Please refer to your browser's Help features to check these settings.

- Pop-Up Blocker should be disabled
- JavaScript should be enabled
- Java should be enabled
- Cookies should be enabled

Plug-ins

The most recent version of the following plug-ins is required for many of the resources available in your online courses:

- Adobe Acrobat Reader
- Apple QuickTime Player
- Java SE 8 or higher

All plug-ins needed to participate in components of your online classes are available at no additional cost. It is recommended that you review the list of plug-ins and install them prior to beginning your coursework.

Screen Settings

Screen resolution (size) should be set at minimum 1024 x 768 or higher.

HelpDesk

There is a link on every Moodle page for 24/7 technical support through an outside vendor.

You can also contact the Jessup HelpDesk (which is not 24/7) through WJU. Email helpdesk@jessup.edu or call 916.577.2345.

Course Grading Explanations

Points	Grade
90-100	A
80-89	B
70-79	C
60-69	D
<59	F

A = Excellent performance. Work is truly exemplary and worthy of emulation by others. Student exceeds expectations and constructively contributes to the learning environment.

B = Above average performance. All assignments are complete and on time and exhibit a complete understanding and an ability to effectively apply concepts.

C = Average performance. Student accomplishes only the minimum requirements or does not complete all requirements. Oral and written communication is at an acceptable level for a college student.

D = Work is below acceptable level for a college student. Student shows only a very basic understanding of the material or does not meet all assignment requirements

Final Grade Calculation

<i>Assignments</i>	<i>Value</i>
Discussion Questions	30%
Review Questions	15%
Reading Responses	10%
Weekly Quizzes	10%
Exam 1	10%
Exam 2	10%
Final Project	15%
	TOTAL: 100%

Course Outline

Week 1	Details	Due	Demand Hours	Course Outcomes
Topics and Learning Objectives	<p>Introduction to Oceans</p> <p>By the end of this week, you should be able to:</p> <ul style="list-style-type: none"> • Assess Marine Biology as a science while biology identifying historical highlights and current developments in the field. • Devise how the scientific method is used to test hypotheses and learn about the natural world. • Critique the evidence to support that plate tectonics is responsible for the origin and structure of the ocean basins while diagramming the geological provinces of the ocean. • Evaluate the basic chemical and physical properties of water, and particularly of seawater. • Diagram the major surface currents, gyres, and tidal patterns. 			1, 4
Reading Assignments	<p>Read</p> <ul style="list-style-type: none"> • Castro & Huber, <i>Marine Biology</i>: Chapters 1, 2 & 3 (63 pages) 		4 hours	1, 2
Video Resources	<p>View</p> <p>Video Lectures</p> <ul style="list-style-type: none"> • Lecture 1: The Science of Marine Biology • Lecture 2: The Sea Floor • Lecture 3: Chemical and Physical Features of the World Ocean 		1 hour	1, 2
Web Resources	<p>Review</p> <ul style="list-style-type: none"> • What is Marine Biology? https://marinebio.org/creatures/marine-biology/ • High tech world of ocean exploration https://oceana.org/blog/watch-behind-scenes-peek-reveals-high-tech-world-ocean-exploration • Scientists “See” Ocean Floor via Sonar https://www.youtube.com/watch?v=-fAAxEiFeLU 		1 hour	

	<p>acidification, overfishing, bycatch, coastal development, ocean plastics, marine pollution, shark finning, climate change and more. These issues extend beyond the environment to impact people, communities and our world, and more importantly they will extend to future generations.</p> <p>This course will culminate with an opportunity for you to take what you have learned and pass on that awareness to others. You have an opportunity to get creative and use your various skills and abilities to raise awareness on the issues. To complete the final project,</p> <p>Design a project that raises awareness of a current issue facing our world's oceans. The project should include the following:</p> <ul style="list-style-type: none"> ● Background information on the issue. How has scientific study contributed to our understanding of the problem? ● What impacts do the problems have on the environment, and why does it matter for the future? ● How does the issue currently impact humanity, and how will it impact future generations? ● Identify an ongoing inquiry or debate that surrounds this issue ● What actions can be taken to help with this issue? ● A practical component that raises awareness - a pamphlet, video, poster, presentation, event, or other. <p>During this final project you will:</p> <ol style="list-style-type: none"> 1. Select a marine conservation issue. You can choose a topic discussed in class, or identify another topic. Unfortunately, there are plenty of issues facing our oceans. Topics will be approved by your professor in Week 1. 2. Identify five key resources. You can find plenty of articles, videos, or webpages online. Resources do not need to be scientific articles. However, they should provide you with a solid understanding of the topic and several facts you can share. Your understanding should incorporate several sources to give you great breadth of the topic. You will submit 5-6 key resources in Week 4 3. Create an outline to synthesize all the key information you will share. Submit your outline in Week 5, which will allow you to work on the creative elements and presentation in the remaining weeks. You should also submit your Final Project in the manner in which you will 	<p>Week 4, Outline due Week 5, Project due Week 6, and Presentation due Sunday by midnight, Week 7</p>		
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	<p>present the content, namely pamphlet, video, poster, presentation, event, etc. in Week 6</p> <p>4. Present your project! You are expected to present this project to a group of people outside this class. You will present the problem and share your knowledge. In the final week's Discussion you will share your experience with the class.</p> <p>*See Writing Rubric(s) & Final Project Rubric provided for further expectations.</p> <ul style="list-style-type: none"> Submit your topic to Moodle 			
		TOTAL HOURS FOR THE WEEK:	17 hours	

<i>Week 2</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
Topics and Learning Objectives	<p>Fundamentals of Biology and Primary Producers</p> <p>By the end of this week, you should be able to:</p> <ul style="list-style-type: none"> Demonstrate an understanding of the basic principles of biology from biochemistry and cell biology to evolution, biodiversity and ecology. Demonstrate an understanding of the most important adaptations of organisms to the marine environment. Differentiate the most important characteristics and ecological significance of marine prokaryotes, protozoans and fungi. Evaluate the most important morphological characteristics, ecological significance, and economic importance of seaweeds and marine flowering plants. 			1, 2
Reading Assignments	<p>Read</p> <ul style="list-style-type: none"> Castro & Huber, <i>Marine Biology</i>: Chapters 4, 5 & 6 (52 pages) 		4 hours	1, 3, 4
Video Resources	<p>View</p> <p>Video Lectures</p> <ul style="list-style-type: none"> Lecture 4: Fundamentals of Biology Lecture 5: The Microbial World Lecture 6: Multicellular Primary Producers 		1.0 hour	1, 6

Reading Response	<p>Read</p> <p>Boxes 4.1 and 4.2 in chapter 4 of your text on Evolutionary Perspectives. Write a 1-2 page response. Answer the following questions:</p> <ul style="list-style-type: none"> • Critique the scientific evidence presented for evolution. Summarize the evidence, evaluate its validity, and assess how it fits into your biblical understanding of Creation. 	Sunday after week 2 class 11:59PM PT	2 hours	1, 4, 6
Quiz #2	<p>Study and Complete</p> <ul style="list-style-type: none"> • Review this week's course materials in preparation for the quiz. • You will have 10 minutes to answer 5 short answer questions. 	Sunday after week 2 class 11:59PM PT	1 hour	1, 2
Exam #1 Preparation	<p>Study</p> <ul style="list-style-type: none"> • See above suggestions. Continue studying for Exam #1 in week 3, which will cover course materials from Weeks 1-3. • The exam will consist of 10 T/F, 26 multiple choice, 10 matching, 5 fill-in-the-blank and 2 short answer questions. 	Sunday, Week 3	1 hour	1,2,3
Final Project	<p>Continue</p> <ul style="list-style-type: none"> • Prompt: This week, begin collecting and reading resources for your project. 		1.5 hours	
		TOTAL HOURS FOR THE WEEK:	19.5 hours	

<i>Week 3</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
Topics and Learning Objectives	<p>Marine Animals</p> <p>By the end of this week, you should be able to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of the most important morphological characters, ecological significance, and economic importance of the major groups of marine invertebrates and vertebrates. • Differentiate the major groups of marine invertebrates in terms of characters such as level 			1, 2, 6

	<p>of organization, body symmetry, and body structures.</p> <ul style="list-style-type: none"> • Compare and contrast between the major groups of marine fishes in terms of composition of the skeleton, type of scales, general morphology and functional aspects of gill slits, type of reproduction, and general feeding habits. • Compare and contrast between the major groups of marine reptiles, birds, and mammals in terms of temperature regulation, type of reproduction, general feeding habits, and ecological significance. 			
Reading Assignments	<p>Read</p> <ul style="list-style-type: none"> • Castro & Huber, <i>Marine Biology</i>: Chapters 7, 8 & 9 (97 pages) 		4 hours	1, 2, 6
Video Resources	<p>View</p> <p>Video Lectures</p> <ul style="list-style-type: none"> • Lecture 7: Marine Invertebrates • Lecture 8: Marine Fishes • Lecture 9: Other Marine Vertebrates 		1 hour	1, 2, 6
Web Resources	<p>Review</p> <ul style="list-style-type: none"> • Marine Biodiversity https://marinebio.org/conservation/marine-conservation-biology/biodiversity/ • California Kelp Forests https://www.scubadiving.com/video-california-dreaming • The intriguing sounds of marine mammals https://www.ted.com/talks/peter_tyack_the_intriguing_sound_of_marine_mammals?language=en 		1 hour	
Discussion	<p>Discuss</p> <ul style="list-style-type: none"> • DQ #1: Choose your favorite marine animal. Share a short web video highlighting this animal, and write your post to share interesting facts about the animal. Post the link in the forum along with your discussion comments. Have you ever been able to see or experience this animal in person, and how did it impact you? • DQ #2: Whaling Many species of whale have been hunted to the brink of extinction. Many people think that we do 	See <i>Discussion Guidelines</i>	3 hours 3 hours	5, 6

	<p>not have the right to kill whales and that all whaling should cease. On the other hand, in many cultures whales have been hunted for centuries and still have great cultural importance. People from such cultures argue that limited whaling should be allowed to continue. What is the role that science can play in deciding who is right? Assess which questions can and cannot be answered by science?</p>			
Review Questions	<p>Complete</p> <p>Complete the following sets of review questions. Download Word files, type answers to questions, and upload.</p> <ul style="list-style-type: none"> Review Questions 4 Review Questions 5 	<p>Sunday after week 3 class 11:59PM PT</p>	<p>2 hours</p>	<p>1, 2</p>
Exam #1	<p>Study and Complete</p> <ul style="list-style-type: none"> Finish studying for Exam #1 (covering content from Week 1-3) and take your exam. You will have 90 minutes to complete the following: 10 T/F, 26 multiple choice, 10 matching, 5 fill-in-the-blank and 2 short answer questions. 	<p>Sunday after week 3 class 11:59PM PT</p>	<p>3 hours</p>	<p>1, 2</p>
Final Project	<p>Continue</p> <ul style="list-style-type: none"> Prompt: This week, continue collecting and reading your resources. Begin organizing for your creative elements. For complete instructions see Final Paper Instructions and Rubric in Moodle 			
		<p>TOTAL HOURS FOR THE WEEK:</p>	<p>19 hours</p>	

<i>Week 4</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
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Topics and Learning Objectives	Marine Ecology and the Intertidal By the end of this week, you should be able to: <ul style="list-style-type: none"> ● Demonstrate an understanding of the basic principles of population dynamics. ● Demonstrate an understanding of how species interact: the concepts of competition, competitive exclusion, predator-prey interactions, and symbiosis. ● Demonstrate an understanding of the concepts of trophic levels and trophic pyramids as applied to the marine environment. ● Explain the essential steps in the most important nutrient cycles (carbon, nitrogen, and phosphate) in the marine environment. ● Explain the factors determining zonation in intertidal organisms and describe adaptations of organisms to hard and soft-bottom habitats 			1, 2
Reading Assignments	Read <ul style="list-style-type: none"> ● Castro & Huber, <i>Marine Biology</i>: Chapters 10 & 11 (60 pages) 		3 hours	1, 2
Video Resources	View Video Lectures <ul style="list-style-type: none"> ● Lecture 10: Introduction to Marine Ecology ● Lecture 11: The Intertidal 		1 hour	1
Web Resources	Review <ul style="list-style-type: none"> ● Marine Ecology https://marinebio.org/conservation/marine-ecology/ ● Intertidal Zone https://thewildclassroom.com/aquatic-biomes/intertidal-zone/ ● Katharine Hayhoe - Climate Scientist https://www.pbs.org/wgbh/nova/video/katharine-hayhoe-climate-scientist/ 		1 hour	
Discussion	Discuss <ul style="list-style-type: none"> ● DQ #1: Our Changing Planet You have examined the evidence that shows Earth's recent climate change is caused by human activities and not natural cycles. How confident are you in this scientific evidence? What is most concerning to you about the impacts this has on the oceans? What potential impacts on the ocean are most concerning to you? Refer to course materials (i.e., readings and video 	<i>See Discussion Guidelines</i>	3 hours	2, 5

	<p>lectures, etc.) in your answer and use APA citation formatting where appropriate.</p> <ul style="list-style-type: none"> DQ #2: A Trip to the Beach Have you ever taken a trip to the beach? Describe an experience you have had watching the waves or exploring a tide pool. How does your new understanding of the dynamics you learned in this chapter help to deepen your experience the next time you visit the beach? 		3 hours	
Review Questions	<p>Complete</p> <p>Complete the following sets of review questions. Download Word files, type answers to questions, and upload.</p> <ul style="list-style-type: none"> Review Questions 6 	<p>Sunday after week 4 class 11:59PM PT</p>	2 hours	1, 2, 4
Reading Response	<p>Read the Special Report: Our Changing Planet in chapter 10 of your text on the causes and impacts of climate change. Write a 1-2 page response. Answer the following questions:</p> <ul style="list-style-type: none"> Evaluate and critique the evidence for climate change and assess the impacts. What is the role of the ocean in climate change, and what impacts have resulted from climate change? In view of this reading, what can we do to mitigate the impacts of climate change? 	<p>Sunday after week 4 class 11:59PM PT</p>	2 hours	1, 2, 3, 4
Quiz #3	<p>Study and Complete</p> <ul style="list-style-type: none"> Review this week's course materials in preparation for the quiz. You will have 10 minutes to answer 5 short answer questions. 	<p>Sunday after week 4 class 11:59PM PT</p>	1 hour	1, 2
Final Project	<p>Continue</p> <p>Prompt: This week, complete a draft of your reference list and submit it through the link on the main course page. It should</p> <ul style="list-style-type: none"> Have at least five written resources (listed in proper APA format). Include 2-3 sentences per resource indicating why you chose it Include one popular magazine article, one research journal article, and one book chapter. <p>See Writing Rubric(s) provided for further expectations.</p>	<p>Sunday after Week 4 class 11:59PM PT</p>	2 hours	3, 5

		TOTAL HOURS FOR THE WEEK:	18	

<i>Week 5</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
Topics and Learning Objectives	<p>Coastal Ecosystems</p> <p>By the end of this week, you should be able to:</p> <ul style="list-style-type: none"> Describe the major types of estuaries and demonstrate understanding of the most important physical characteristics of estuaries. Compare and contrast between the geographical distribution of salt marshes and mangrove forests. Demonstrate an understanding of the most important physical characteristics influencing subtidal communities. Assess the most important types of organisms found in hard-bottom subtidal communities, particularly in kelp forests. Explain the most important aspects (taxonomic position, morphology, nutrition, reproduction) of reef-building corals. Demonstrate an understanding of the role of zooxanthellae on the biology of reef corals. Differentiate the most important physical factors influencing the development, growth, and geographical distribution of coral reefs, including reef corals and other reef builders. 			1, 2, 6
Reading Assignments	<p>Read</p> <ul style="list-style-type: none"> Castro & Huber, <i>Marine Biology</i>: Chapters 12, 13 & 14 (66 pages) 		3 hours	1, 2

Video Resources	View Video Lectures <ul style="list-style-type: none"> • Lecture 12: Estuaries • Lecture 13: The Continental Shelf • Lecture 14: Coral Reefs 		1 hour	1, 2, 5
Web Resources	Review <ul style="list-style-type: none"> • What is an estuary? https://coast.noaa.gov/estuaries/videos/what-is-an-estuary.html • Corals and Coral Reefs https://ocean.si.edu/ocean-life/invertebrates/corals-and-coral-reefs • Biodiversity of the Great Barrier Reef https://www.science.org.au/curious/great-barrier-reef 		1 hour	
Discussion	Discuss <ul style="list-style-type: none"> • DQ #1: Dive in! You have a choice to go scuba diving in the cold water Kelp forest of California or the warm water coral reef of Florida. Which location would you choose and why? Describe the marine life you would see in that area and one important issue facing the environment in that location. • DQ #2: Californians, Christians and Coral In central California we are thousands of miles from any coral reef. Why should the future of coral reefs be important to us as individuals and as Christians? Describe one way you could raise awareness of issues facing coral reefs among our local communities. 	<i>See Discussion Guidelines</i>	3 hours 3 hours	1, 2, 5, 6
Review Questions	Complete Complete the following sets of review questions. Download Word files, type answers to questions, and upload. <ul style="list-style-type: none"> • Review Questions 7 • Review Questions 8 	Sunday after week 5 class 11:59PM PT	2 hours	1, 2
Quiz #4	Study and Complete <ul style="list-style-type: none"> • Review this week's course materials in preparation for the quiz. • You will have 10 minutes to answer 5 short answer questions. 	Sunday after week 5 class 11:59PM PT	1 hour	1, 2

Exam 2 Preparation	<p>Study</p> <ul style="list-style-type: none"> • Begin studying for Exam #2 in week 7, which will cover course materials from Weeks 4-7. • The exam will consist of 10 T/F, 26 multiple choice, 10 matching, 5 fill-in-the-blank and 2 short answer questions. 		1 hour	1, 2
Final Project	<p>Continue</p> <p>This week submit your outline of information that will be presented creatively in your final project. Your outline should include:</p> <ul style="list-style-type: none"> • Background information on the issue. How has scientific study contributed to our understanding of the problem? • What impacts do the problems have on the environment, and why does it matter for the future? • How does the issue currently impact humanity, and how will it impact future generations? • Identify an ongoing inquiry or debate that surrounds this issue • What actions can be taken to help with this issue? <p>For complete instructions see Final Paper Instructions and Rubric in Moodle</p>	Sunday after week 5 class 11:59PM PT	4 hours	5, 6
		TOTAL HOURS FOR THE WEEK:	18	

<i>Week 6</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
Topics and Learning Objectives	<p>The Open Ocean and the Deep</p> <p>By the end of this week, you should be able to:</p> <ul style="list-style-type: none"> • Describe the most important groups of organisms that comprise the phytoplankton and zooplankton. • Summarize other ways of categorizing plankton. • Demonstrate an understanding of the most important adaptations of epipelagic organisms and summarize examples of these adaptations. • Demonstrate an understanding of the basic geographic and seasonal patterns of primary productivity, including the effects of upwelling. • Describe important physical characteristics influencing communities of the ocean depths. • Explain the most outstanding biological adaptations of mesopelagic animals, particularly feeding, vertical migrations, and coloration. 			1, 2

Reading Assignments	Read <ul style="list-style-type: none"> Castro & Huber, <i>Marine Biology</i>: Chapters 15 & 16 (51 pages) 		2 hours	1, 2
Video Resources	View Video Lectures <ul style="list-style-type: none"> Lecture 15: The Open Ocean Lecture 16: The Deep Ocean 		1 hour	1, 2
Web Resources	Review <ul style="list-style-type: none"> Video Plankton Recorder https://www.whoi.edu/what-we-do/explore/instruments/instruments-sensors-samplers/video-plankton-recorder-vpr/ The Open Ocean https://marinebio.org/oceans/open-ocean/ Alien Deep: Technology https://www.nationalgeographic.org/media/ocean-exploration/ 		1 hour	
Discussion	Discuss <ul style="list-style-type: none"> DQ #1: Swimming Machines Box 15.2 in your textbook discusses the amazing features of open ocean fish that enable them to swim long distances and fast speeds in the open oceans. Analyze several elements in the design of open ocean swimmers and discuss why you think this does or does not provide evidence for a Designer and Creator. DQ #2: Aliens Below The ocean has often been described as Earth's "final frontier." Create a study to investigate the amazing creatures of the deep. Include things like, what technology you use, how you would spend the year collecting samples and studying new life forms, etc. 	See <i>Discussion Guidelines</i>	3 hours 3 hours	2, 6
Review Questions	Complete Complete the following sets of review questions. Download Word files, type answers to questions, and upload. <ul style="list-style-type: none"> Review Questions 9 	Sunday after week 6 class 11:59PM PT	2 hours	1, 2
Reading	Read Box 15.1 in chapter 15 of your text on harmful algal	Sunday after	2 hours	1, 4, 6

Response	<p>blooms. Write a 1-2 page response. Answer the following questions:</p> <ul style="list-style-type: none"> Describe the biological cause of harmful algal blooms. What are the causes and effects of algal blooms? How does this phenomenon illustrate the connectivity of the terrestrial environment with the marine environment? 	week 6 class 11:59PM PT		
Quiz #5	<p>Study and Complete</p> <ul style="list-style-type: none"> Review this week's course materials in preparation for the quiz. You will have 10 minutes to answer 5 short answer questions. 	Sunday after week 6 class 11:59PM PT	1 hour	1, 2
Exam 2 Preparation	<p>Study</p> <ul style="list-style-type: none"> Continue studying for Exam #2 in week 7, which will cover course materials from Weeks 4-7. The exam will consist of 10 T/F, 26 multiple choice, 10 matching, 5 fill-in-the-blank and 2 short answer questions. 		1 hour	1, 2
Final Project	<p>Continue</p> <p>This week you will submit your creative practical component to the instructor. This practical component is a creative element that raises awareness - a pamphlet, video, poster, presentation, event, or other.</p> <p>For complete instructions see Final Paper Instructions and Rubric in Moodle</p>	Sunday after week 6 class 11:59PM PT	3.5 hours	3, 6
		TOTAL HOURS FOR THE WEEK:	19.5 hours	

<i>Week 7</i>	<i>Details</i>	<i>Due</i>	<i>Demand Hours</i>	<i>Course Outcomes</i>
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Topics and Learning Objectives	Humans and the Sea By the end of this week, you should be able to: <ul style="list-style-type: none"> • Assess the major fishing areas of the world and discuss the trends in world fish catches during the past 30 years. • Critique the management of resources and the development of new fisheries and/or mariculture to compensate for overfishing. • Delineate some of the most important non-living resources that we obtain from the ocean floor and from seawater. • Assess the severity of human effects between coral reefs, estuaries, mangrove forests, and other wetlands. • Strategize and create a list of alternatives to minimize human impacts on the marine environment. 			4, 5
Reading Assignments	Read <ul style="list-style-type: none"> • Castro & Huber, <i>Marine Biology</i>: Chapters 17 & 18 (44 pages) 		2 hours	1, 2, 5
Video Resources	View Video Lectures <ul style="list-style-type: none"> • Lecture 17: Resources from the Sea • Lecture 18: The Impact of Humans on the Marine Environment 		1 hours	
Web Resources	Review <ul style="list-style-type: none"> • Fishery observers https://www.fisheries.noaa.gov/topic/fishery-observers • Endangered species conservation https://www.fisheries.noaa.gov/topic/endangered-species-conservation • Aquaculture https://www.fisheries.noaa.gov/topic/aquaculture • Habitat conservation https://www.fisheries.noaa.gov/topic/habitat-conservation 		1 hour	

	<p>in. They are completely anonymous, so feel free to be honest. Jessup Online uses the reports to guide our decision-making for future courses.</p> <ul style="list-style-type: none">• After you have completed the survey, please follow the directions in the Course Evaluation Assignment to let your instructor know that you have completed this course requirement			
		TOTAL HOURS FOR THE WEEK:	19.5 hours	