WILLIAM JESSUP UNIVERSITY

BIOL206L: Oceanography Lab

Course Syllabus

Course Description

Laboratory exercises provide students with opportunities to study physical conditions and processes within the oceans. This laboratory course is a 1-credit companion course to BIOL206 but does not need to be taken concurrently. Appropriate for non-science majors, it is a physical science.

Course Outcomes

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

1. Explain the interdisciplinary nature of oceanographic science.
2. Apply the scientific method as a framework for studying Earth's oceans.
3. Analyze physical, chemical, geological and biological parameters of our oceans.
4. Survey modern laboratory and field techniques used in the field of oceanography.
5. Relate theoretical oceanographic models to real-world examples.

Course Materials

Required Material(s)

Students must purchase:

Chauffe & Jeffries, *Laboratory Exercises to Accompany Invitation to Oceanography*. ISBN 978-1-4496-9860-7

(Note, this text is available as an e-text at www.jblearning.com)

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

Trujillo & Thurman, *Essentials of Oceanography*, 13th Edition. ISBN -13: 978-0-13-489152-1

Webb, Introduction to Oceanography. https://rwu.pressbooks.pub/webboceanography/

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.

F = Work is not passing. Student's work is incomplete or does not apply information and concepts in a satisfactory manner.

Final Grade Calculation

Assignments		***Value***
Lab Reports		75%
Discussion Questions		25%
	TOTAL:	100%

Course Outline

Week 1	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 1: Metric-English Conversion, Understanding Graphs, and the Graticule** By the end of this week, you should be able to: ● Reframe the English system of measurement to the metric system ● Recognize scientific notation and convert all units from English to metric measurements ● Compare graphical methods for presenting scientific data ● Identify and sketch lines of latitude and longitude on the graticule **Laboratory 2: Bathymetric Charts and Scientific Notation** By the end of this week, you should be able to: ● Visualize a three-dimensional sea-floor surface from a two-dimensional marine chart or map ● Create contour charts from an array of individual sea-floor depth measurements (soundings) ● Reveal the shape of the sea floor or specific sea-floor features by constructing topographic profiles			1,2, 4
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including ● Laboratory 1: sections 1-1, 1-2, 1-3 ● Laboratory 2: sections 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 2-7 **Optional, additional and helpful reading from text:** ● Trujillo & Thurman, *Essentials of Oceanography*: Sections 1.1, 3.1 and 6.1, 12 pages		1 hour	1,2, 4

Video Resources	**View** **"Office Hours" Videos:** ● Course Intro ● Overview of Labs 1 & 2 **Additional Videos:** ● Schmidt Ocean Institute ● Life at Sea for NOAA Scientists and Crew (NOAA)		1 hour	1,2, 4
Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly. ● Laboratory 1: o Exercise 1 o Exercise 2 o Exercise 3 ● Laboratory 2: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5	**Sunday after Week 1 class 11:59PM PT**	3 hours	1,2, 4
Discussion	**Discuss** ● **DQ #1: Scientific Measurement in the Sea** Draw together your study for the week by delineating the systems of measurement used in oceanographic science. Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	1,5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 2	*Details*	*Due*	*Demand Hours*	*Course Outcomes*

Weekly Topics & Learning Goals	**Laboratory 3: Ocean Basin Physiography and Plate Tectonics** By the end of this week, you should be able to: ● Describe the diverse topography of the sea floor ● Arrange the major physiographic provinces in a systematic order ● Distinguish the names, locations and probable origins of many of the oceans' physical features ● Explain the distribution of the earth's major physiographic features such as volcanoes, oceanic trenches, and mid-ocean ridges ● Recognize the scientific importance of plate boundaries and the geophysical activities taking place there ● Analyze the slow rates at which place tectonic processes take place and gain an appreciation of the great spans we call "geologic time." **Laboratory 4: Bottom Sediment Charts** By the end of this week, you should be able to: ● Describe the marine and terrestrial processes that determine the distribution of sediments and mineral sources on the seafloor ● Summarize the role that shell-building organisms play in the accumulation of important sediment types and in moderating the chemistry of the oceans			1,3, 4
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including ● Laboratory 3: sections 3-1, 3-2, 3-3, 3-4 ● Laboratory 4: sections 4-1, 4-2, 4-3, 4-4, 4-5, 4-6 **Optional, additional and helpful reading from text:** ● Trujillo & Thurman, *Essentials of Oceanography*: Sections 2.4, 3.2 and 4.1, 15 pages		1 hour	1,3, 4
Video Resources	**View** **"Office Hours" Videos:** ● Overview of Lab 3 ● Overview of Lab 4 **Additional Videos:** ● How do scientists collect sediment cores?		1 hour	1,3, 4

Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly. ● Laboratory 3: o Exercise 1 o Exercise 2 o Exercise 3 ● Laboratory 4: o Exercise 1 o Exercise 2 o Exercise 3	**Sunday after Week 2 class 11:59PM PT**	3 hours	1,3, 4
Discussion	**Discuss** ● **DQ #1: Studying the Depths of Sea** Draw together your study for the week by categorizing the depths of the ocean. Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 3	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 5: Salinity, Temperature and Turbidity** By the end of this week, you should be able to: ● Analyze the vertical thermal gradient in the oceans and its importance in constraining the vertical motion of seawater ● Describe the physics of upwelling and its importance in coastal water temperature and climate moderation ● Explain what makes the oceans salty ● Recognize how sediments impact turbidity in the ocean **Laboratory 6: Ocean Circulation** By the end of this week, you should be able to:			2,3, 4

	• Identify large masses of water and the oceanographic, biological, and meteorological significance of these masses • Distinguish the roles of temperature, salinity and density in the formation and transport of water masses • Recognize the major movements of surface water in the oceans • Describe how currents influence climate by redistributing energy from the sun and stored heat on earth • Identify the roles that wind gravity, and the earth's rotation play in determining the direction and velocity of ocean currents • Analyze the physics of upwelling and its importance in coastal water temperatures and climate moderation			
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including • Laboratory 5: sections 5-1, 5-2, 5-3, 5-4, 5-5, 5-6 • Laboratory 6: sections 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7 **Optional, additional and helpful reading from text:** • Trujillo & Thurman, *Essentials of Oceanography*: Sections 5.5, 5.6, 7.1 and 7.2, 12 pages		1 hour	2,3, 4
Video Resources	**View** **"Office Hours" Videos:** • Overview of Lab 5 • Overview of Lab 6 **Additional Videos:** • The CTD Rosette • Ocean Robots		1 hour	2,3, 4

Lab Exercises and Reports	**Read, Perform, Complete**
	
	Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly.
	
	• Laboratory 5:
	  o Exercise 1
	  o Exercise 2
	  o Exercise 3
	  o Exercise 4
	  o Exercise 5
	  o Exercise 6
	
	• Laboratory 6:
		Sunday after Week 3 class 11:59PM PT	3 hours	2,3, 4

	o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5			
Discussion	**Discuss** ● **DQ #1: Materials and Movements in the Sea** Draw together your study for the week by correlating the role of temperature, salinity, and surface winds in circulation of the seas. Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 4	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 7: Waves** By the end of this week, you should be able to: ● Classify the generation and motion of wind waves at sea ● Analyze the physics behind the limits of the height and velocity of deep-water wind waves ● Compare the characteristics of wind waves as they move from deep water to shallow water ● Interpret what causes waves to peak and break as surf and how they generate longshore currents and dangerous rip currents ● Investigate the dynamics of sand, beach drifting, and beach erosion			2,3, 4

Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including ● Laboratory 7: sections 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8, 7-9 **Optional, additional and helpful reading from text:** ● Trujillo & Thurman, *Essentials of Oceanography*: Chapters 8: Sections 8.1, 8.2, 8.3, 8.4, 20 pages		1 hour	2,3, 4
Video Resources	**View** **"Office Hours" Videos:** ● Overview of Lab 7 **Additional Videos:** ● Wave Energy: Harnessing the Ocean's Power		1 hour	2,3, 4
Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly. ● Laboratory 7: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 5 o Exercise 6 o Exercise 7 o Exercise 8	**Sunday after Week 4 class 11:59PM PT**	3 hours	2,3, 4
Discussion	**Discuss** ● **DQ #1: Surf and the Seas** Draw together your study for the week by relating an experience you have had at the beach or on a boat with your new understanding of ocean waves. Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 5	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 8: Tides** By the end of this week, you should be able to: ● Distinguish the roles of gravity and centrifugal force in influencing the heights of oceanic tides throughout a lunar month ● Illustrate why tides arrive at different times and why they display different magnitudes and frequencies in coastal and deep water ● Explain how the shape of the coastline influences the tides **Laboratory 9: Nautical Charts 1 and Time** By the end of this week, you should be able to: ● Describe the coordinate system (latitude and longitude) of the earth's sphere ● Correlate latitude and longitude to distance on a marine chart ● Distinguish time zones and relate time to latitude and longitude on the globe			2,3, 4
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including ● Laboratory 8: sections 8-1, 8-2, 8-3, 8-4, 8-5 ● Laboratory 9: sections 9-1, 9-2, 9-3, 9-4, 9-5, 9-6 **Optional, additional and helpful reading from text:** ● Trujillo & Thurman, *Essentials of Oceanography*: Sections 9.1 and 9.2, 10 pages		1 hour	2,3, 4
Video Resources	**View** **"Office Hours" Videos:** ● Overview of Lab 8 ● Overview of Lab 9 **Additional Videos:** ● The Value of Accurate Water Levels		1 hour	2,3, 4
Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete	**Sunday after Week 5 class**	3 hours	2,3, 4

	pages and submit as a single document. Write neatly. ● Laboratory 8: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5 o Exercise 6 ● Laboratory 9: o Exercise 1 o Exercise 2	**11:59PM PT**		
Discussion	**Discuss** ● **DQ #1: Navigating Tides and Seas** Draw together your study for the week by considering the importance of tides on marine organisms. Have you ever witnessed changing tides? Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 6	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 10: Marine Ecosystem** By the end of this week, you should be able to: ● Describe the process of primary productivity and its importance ● Identify the interactions between and flow energy through producers, consumers, and decomposers ● Recognize how humans can disrupt marine ecosystems **Laboratory 11: Coastal Areas and the Shoreline** By the end of this week, you should be able to: ● Compare the characteristics of wind waves as they move from deep water to shallow water ● Interpret what causes waves to peak and break as surf and how they generate longshore currents and dangerous rip currents			1,3, 4

	• Investigate the dynamics of sand, beach drifting, and beach erosion			
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including • Laboratory 10: sections 10-1, 10-2, 10-3 • Laboratory 11: sections 11-1, 11-2, 11-3, 11-4, 11-5, 11-6, 11-7, 11-8 **Optional, additional and helpful reading from text:** • Trujillo & Thurman, *Essentials of Oceanography*: Sections 13.1, 13.4, 10.1, 10.2, and 10.3, 20 pages		1 hour	1,3, 4
Video Resources	**View** **"Office Hours" Videos:** • Overview of Lab 10 • Overview of Lab 11 **Additional Videos:** • Plankton Sampling at Palmer Station		1 hour	1,3, 4
Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly. • Laboratory 10: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 • Laboratory 11: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5 o Exercise 6 o Exercise 7	**Sunday after Week 1 class 11:59PM PT**	3 hours	1,3, 4

Discussion	**Discuss** ● **DQ #1: Marine Ecosystems** Draw together your study for the week by delineating energy transfer in a marine ecosystem. Assess one fact you learned, and then formulate a question you could further investigate.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	

Week 7	*Details*	*Due*	*Demand Hours*	*Course Outcomes*
Weekly Topics & Learning Goals	**Laboratory 12: Ocean Pollution** By the end of this week, you should be able to: ● Defining marine pollution ● Categorizing sources of marine pollution ● Relating marine pollution to impacts on marine organisms and ecosystems **Laboratory 13: Nautical Charts 2 and Piloting** By the end of this week, you should be able to: ● Interpret a compass rose ● Identify data found on marine charts ● Plot a predetermined course on a chart and to navigate using directions and landmarks			1, 3
Reading Assignments	**Read** Read the overviews of the exercises in Chauffe & Jefferies, *Laboratory Exercises*, including ● Laboratory 12: sections 12-1, 12-2, 12-3, 12-4, 12-5, 12-6 ● Laboratory 13: sections 13-1, 13-2, 13-3, 13-4, 13-5, 13-6, 13-7 **Optional, additional and helpful reading from text:** ● Trujillo & Thurman, *Essentials of Oceanography*: Sections 11.3 and 11.4, 10 pages		1 hour	1, 3

Video Resources	**View** **"Office Hours" Videos:** ● Overview of Lab 12 ● Overview of Lab 13 **Additional Videos:** ● The Gulf Oil Spill Disintegrated This Island		1 hour	1, 3
Lab Exercises and Reports	**Read, Perform, Complete** Directions: Following your reading for this week's exercises in Chauffe & Jefferies, *Laboratory Exercises…,* you will find the lab exercises. Complete all questions and exercises in the following reports. Scan the complete pages and submit as a single document. Write neatly. ● Laboratory 12: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5 o Exercise 6 ● Laboratory 13: o Exercise 1 o Exercise 2 o Exercise 3 o Exercise 4 o Exercise 5 o Exercise 6 o Exercise 7	**Sunday after Week 1 class 11:59PM PT**	3 hours	1, 3
Discussion	**Discuss** ● **DQ #1: Marine Pollution** Draw together your study for the week by describing the impact of marine pollution on marine organisms. Assess one fact you learned, and then formulate one action you can take to mitigate the issue.	See *Discussion Guidelines*	2 hours	5
		TOTAL HOURS FOR THE WEEK:	7 hours	