

OCEANOGRAPHY - GEOLOGY 12
Fridays (Section #0197) - Fall 2010
Sonjia Leyva

INSTRUCTOR INFORMATION: Office: E210G Phone: (626) 585-3327
E-mail: smleyva@pasadena.edu WEB: <http://www.geophile.net/College>

REQUIRED MATERIALS:

- Essentials of Oceanography ALC (Loose-Leaf) by Trujillo & Thurman (ISBN: 978-0-321-61683-8), in addition to handouts & videos.
- Lecture Notes by Sonjia Leyva, available at the bookstore or at <http://www.geophile.net/College/Oceanography.htm>
- Tracing paper, ruler (standard & metric), color pencils, plus other materials (will be discussed in class)
- Account at PCC's Blackboard website (<http://pcc.blackboard.com>)

PURPOSE OF THIS COURSE

The purpose of this course is to expose you to a broad range of topics in the ocean sciences, familiarize you with scientific methods and terminology, and provide a basic understanding of how the earth works. Whatever profession or vocation you choose, as a citizen and a voter you will have to make decisions concerning problems either directly or indirectly related to the earth sciences, and the oceans in particular.

STUDENT GOALS

Upon successful completion of this course, the student will be able to:

1. Explain the fundamental differences between continents and ocean basins, and explain how ocean basins originate, develop and are destroyed on the basis of plate tectonic models.
2. Know the physiographic subdivisions of the ocean basins and how the characteristics of each are related to plate tectonic, depositional and erosive processes.
3. Be able to explain how the seas originated during the early geologic history of the earth.
4. Know the chemical composition and range of physical properties of seawater and those processes that regulate it.
5. Relate seawater circulation and composition to biological productivity and the distribution of organic life.
6. Explain how horizontal oceanic circulation affects vertical circulation.
7. Understand the coupling between atmospheric and oceanic circulation with respect to wind-driven and geostrophic currents.
8. Explain how waves originate, propagate, and refract and reflect on coastlines to produce longshore currents, littoral drift and depositional-erosional features.
9. Explain how man's engineering structures can impact natural balanced coastal processes.
10. Explain how tides develop and how they are classified.
11. Explain how marine sediments are classified and which chemical and physical principles determine their distribution.

STUDENT LEARNING OUTCOMES

In a broader sense, students will finish this class with the following:

1. Knowledge of the scientific method and an ability to apply it in critical evaluation of oceanographic observations and trends in ocean science.
2. A basic knowledge of the evolution, characteristics, and spatial variability of the world's oceans.
3. An appreciation for mankind's changing relationship to the oceans.

METHODS OF EVALUATION, GRADING, ATTENDANCE:

Exams - There will be two exams - one midterm and one final; each exam is worth 100 points. **Make-up exams will be given only to those who can verify a valid excuse for missing an exam.** The make-up will be given at a time that is mutually agreeable to both the student and myself, but must be arranged prior to the initial exam. **Failure to take the make-up exam within two weeks of the original exam date will result in the missed exam counting in as a zero.**

Weekly Quizzes – Students are required to log onto Blackboard and take a weekly quiz. Each quiz will be worth 20 points and will cover what we have learned (or will learn) in class that week. Students may access the quiz anytime from 8 am Monday through midnight Friday. Students may take the quiz only once. Students who do not take the quiz during the allowed time will not be allowed to make up the quiz unless they have an excused absence. **No exceptions!**

Homework/Activities - There will be several in-class activities during the course of this class. You are responsible for bringing in the necessary supplies. In addition, you may be responsible for answering a few of the “end-of-chapter” review/critical thinking question. Each assignment is worth 20 - 30 points each. You will be graded on neatness, completeness of activity, and ability to follow directions. **Late work will not be accepted. Students who miss a class due to an unexcused absence will NOT be allowed to make up the work.** Make-up assignments will be given only to those who can verify a valid excuse for missing the assignment. The make-up assignment will given at a time that is mutually agreeable to both the student and myself. **Failure to take the make-up assignment within one week of the original assignment date OR before the last week of class will result in the missed exam/assignment counting in as a zero. All proof of excused absences MUST be shown PRIOR to the student making up the assignment/exam, and MUST be BEFORE the last day of class.**

Presentations - Each student will participate in a group presentation to be given in class during the semester. Guidelines and topics for these presentations are outlined on the attached pages. Each presentation is worth 100 points.

Attendance - Students are expected to attend each class session and to arrive on time. Funding for this college is based on student attendance, therefore **YOU MUST ATTEND CLASS** if you wish to get credit for this course. It will be difficult to make up missed class sessions. However, if you miss a class session of valid reasons (illness), it will up to you to make arrangements to complete the activity. **Students who miss a class due to an unexcused absence will NOT be allowed to make up the work.** Make-up assignments will be given only to those who can verify a valid excuse for missing the assignment. The make-up assignment will given at a time that is mutually agreeable to both the student and myself. **Failure to take the make-up assignment within one week of the original assignment date OR before the last week of class will result in the missed exam/assignment counting in as a zero. All proof of excused absences MUST be shown PRIOR to the student making up the assignment/exam, and MUST be BEFORE the last day of class.** Students may be dismissed for 10 hours of absence. If you drop the class you must do so officially or you may receive an “F”.


Assessment - Your grade in this class is based upon the points YOU earn through completing assignments, quizzes, presentations, and exams. Nothing in this class is curved. Your grade is based upon your performance. Your final grade in this class is based on your percentage score out of 800 points. See the table below.

You may do up to 20 points of extra credit work to raise your total points earned (please see attached list). All extra credit is due the last day of class – not the day of the final. By doing extra credit you agree that you will NOT ask to have your grade “bumped up” at the end of the semester.

	Points Possible	Total Points Possible	% of Grade
Exams	2 exams at 100 points each	200	25.0%
Quizzes	10 quizzes at 20 points each	200	25.0%
Activities	10 activities at 20 - 30 points each	200	25.0%
Presentation	2 at 100 points each	200	25.0%
		800	100%

A = > 90%	> 720.0 points
B = 80 - 89%	640.0 - 719.9 points
C = 70 - 79%	560.0 - 639.9 points
D = 60 - 69%	480.0 - 559.9 points
F = < 60%	< 480.0 points

TENTATIVE SCHEDULE

Week	Date	Topic	Chapter
1	9/03	Lecture: Introduction	1
		Lecture: Exploring the Oceans	
2	9/10	Lecture & Activity: Plate Tectonics (maps due 9/24)	2
3	9/17	Lecture & Activity: Plate Tectonics	2
4	9/24	Lecture & Activity: Marine Provinces & Video	3
5	10/01	Lecture: Marine Sediments	4
6	10/08	Lecture: Seawater (Seawater Data assignment due 10/15)	5
7	10/15	PRESENTATIONS	
8	10/22	MIDTERM EXAM	
		Video (review due 10/29)	
9	10/29	Lecture & Activity: Atmospheric Circulation (Orbica assignment due 11/12)	6
10	11/05	Lecture & Activity: Oceanic Circulation (Orbica assignment due 11/12)	7
11	11/12	Lecture & Activity: Waves (Video Review due 11/26)	8
12	11/19	<i>Thanksgiving! Campus Closed!</i> 	
13	11/26	Lecture & Activity: Tides (Tidal Patterns due 12/03)	9
14	12/03	Lecture & Activity: Coastal Processes (Beach Sands due 12/10)	10
15	12/10	PRESENTATIONS & last day to turn in extra credit! NO exceptions!	
16	12/17	FINAL EXAM - 10:15 a.m. to 12:15 p.m.	

Want to get a good grade? Here's how:

- Attend every class.
- Take notes and review them after class and before exams.
- Read the textbook.
- Ask questions. **You** are responsible for studying.

Activities:

There will be several in-class activities during the course of this class. You are responsible for bringing in the necessary supplies. In addition, you may be responsible for answering a few of the “end-of-chapter” review/critical thinking question. Each assignment is worth 40 points each. You will be graded on neatness, completeness of activity, and ability to follow directions. **Late work will not be accepted.**

Topic	Points Possible	Date Due
Plate Tectonic Maps Project (3 maps)	60	9/24
Seawater Data	20	10/15
Presentation #1	100	10/15
Video Review #1	20	10/29
Orbica Maps (Atmospheric & Oceanic Circulation Maps)	40	11/12
Video Review #2	20	11/26
Tidal Patterns	20	12/03
Beach Sands	20	12/10
Presentation #1	100	12/10

Quizzes:

Students are required to log onto Blackboard and take a weekly quiz. Each quiz will be worth 20 points and will cover what we have learned (or will learn) in class that week. Students may access the quiz anytime from 8 am Saturday through midnight the following Friday. Students may take the quiz only once. Students who do not take the quiz during the allowed time will not be allowed to make up the quiz unless they have an excused absence. **No exceptions!**

Quiz #	Topic	Dates Available
1	Introduction / Exploring the Oceans	09/03 – 09/17
2	Plate Tectonics	09/11 – 09/17
3	Plate Tectonics	09/18 – 09/24
4	Features of the Sea Floor	09/25 - 10/01
5	Marine Sediments	10/02 - 10/08
6	Seawater	10/09 – 10/15
7	Atmospheric Circulation	10/30 – 11/05
8	Oceanic Circulation	11/13 - 11/19
9	Waves	11/27 – 12/03
10	Coastal Processes	12/04 - 12/10

Exams:

There will be two exams, worth 100 points each. **Make-up exams will be given only to those who can verify a valid excuse for missing an exam.** The make-up will be given at a time that is mutually agreeable to both the student and myself, but must be arranged prior to the initial exam. **Failure to take the make-up exam within two weeks of the original exam date will result in the missed exam counting in as a zero.**

Exam #	Topic	Date
1	Introduction through Seawater	10/22
2	Atmospheric Circulation through Coastal Processes	12/17

Presentations

Each student will participate in a group presentation to be given to the class during the semester. Placement into groups will be done by a lottery, as will the assignment of topics. The topics are outlined in your textbook and will not be discussed in my lectures. Your group will be leading the class in learning about your chosen subject.

The presentations are expected to be 10 - 15 minutes in length. The format of the presentation is up to the group. You may use the chalkboard, overheads, a PowerPoint presentation, poster board, or any other method you deem worthy. Recall that your primary goal is to teach your fellow students. When preparing your presentation, keep in mind that you need to be clear and concise, have a logical flow of ideas, keep your text legible (e.g., use a large enough font so that the people in the back can see), use relevant information, and be professional.

Your presentations will be graded as follows (rubric included on next page):

- 40% Accuracy of content.
- 20% Visual quality of presentation
- 20% Quality of presentation
- 20% "Self Grades" - each member of the group will grade the other members on the quality of their participation to the project. So if one member flakes out and the others have to pick up the slack, this is their chance to let it be known.

1. Exploration via submersibles	Week before midterms
2. Sea Turtles	
3. Bermuda Triangle	
4. Use of diatoms	
5. History of the Mediterranean Sea	
6. K-T event	
7. Deep Sea Drilling	
8. OTEC systems	
9. Galveston Hurricane	
10. SOFAR channel	
11. Ben Franklin and the Gulf Stream	
12. Lituya Bay, Alaska tsunami	Week before finals
13. Rogue Waves	
14. Tidal Bores	
15. Moving the Cape Hatteras Lighthouse	
16. Exxon Valdez Oil Spill	
17. Deep Scattering Layer	
18. Red Tides	
19. Peruvian Anchoveta Fishery	
20. Killer Whales	
21. Coral Bleaching	
22. How long would an organism's remains remain on the sea floor?	

Student Presentations

Scoring:

- Good** (all criteria met or exceeded) = full points
- Fair** (most criteria met, a few mistakes) = 1/2 of possible points
- Poor** (few criteria met, lots of mistakes) = 1/4 of possible points
- None** (not done) = no points

	Points possible
Accuracy of content (40 points)	
Understanding of material being presented	20 points
Quality of research	10 points
Accuracy of material being presented	10 points
Visual quality of presentation (20 points)	
Text easy to read and not cluttered	5 points
Quality of images or props	5 points
Logical flow of ideas	5 points
Stays within time limits (-2 <i>point for each minute over/under</i>)	5 points
Quality of presentation (20 points)	
Delivery (speaks clearly, not rushed, pronounces words correctly)	5 points
Speaks to class, not to the projection screen	5 points
Material relevant to topic	10 points
"Self Grades" - see attached evaluations (10 points)	10 points
Class Evaluations (Average of all evaluations - 10 points)	10 points
Total	100 points

EXTRA CREDIT

You have the opportunity to earn extra credit if you wish. **All work must be turned in the class period before the final exam.** You may earn up to 20 points extra credit by doing any combination of the following assignments listed below. PLEASE NOTE: Please DO NOT ask for me to “bump” up your grade at the end of the semester – by doing extra credit you have already enhanced your grade in this class and will not be eligible for any more “extra” points, no matter how close you are to the next grade up.

FORMAT for Reports (for #1 - #3):

- 1 to 2 pages, typed, 1.5 spacing, standard margins and fonts and concise.
- The quality of your English composition is important.
- Don't forget to use correct essay form - Intro paragraph with thesis statement, three examples, and conclusion paragraph.
- Don't forget to cite your references in the appropriate format.
- Make sure your name is on your report.
- Please remember that I am concerned about the environment. I do not want plastic covers, extra cover pages, or any other type of binder. Save paper and you save trees. Save plastic and you save petroleum.

1. In essay format, discuss three ways that you can help clean up the oceans or coasts. (5 points)
2. Find 3 articles that deal with geological issues and write a summary of each article. Combine the 3 summaries into a paper that is no more than 2 pages long. Articles may be found in the Los Angeles Times, Discover Magazine, Newsweek, Time Magazine, California Geology (in the Library), etc. Use published papers, not Internet articles. Provide your opinion or analysis. A bibliography and copies of your articles are required as well. (15 points)
3. Write a book report on any one of the books listed below. (15 points)
 - a. "Control of Nature" by John McPhee
 - b. "Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America" by John M. Barry
 - c. "Entropy: Into the Greenhouse World" by Jeremy Rifkin
 - d. "Manmade Disaster: The Story of the St. Francis Dam Disaster" by Charles Outland
 - e. "The Johnstown Flood" by David McCullough
 - f. "Cadillac Desert: The American West and its Disappearing Water" by Marc Reisner
 - g. "Earthquake: The Destruction of San Francisco" by Thomas Gordon and Max Witts
 - h. "The Day the World Ended" by Thomas Gordon and Max Witts (This is the story of the eruption of Mt. Pelee and the destruction of St. Pierre.)
 - i. "Salt: A World History" by Mark Kurlansky
 - j. "Isaac's Storm: A Man, A Time, and the Deadliest Hurricane in History" by Erik Larson
4. Do one of the Virtual Classware assignments located at <http://www.sciencecourseware.com/>. Click on either "Virtual Courseware for Earth and Environmental Sciences" or "Geology Labs Online" and choose one of the following: Global Warming, Virtual Earthquake, Virtual Dating, or Virtual River. Upon completion of the assignment, you will be awarded a certificate that you will need to print out and turn in. You may do more than one of the exercises. (10 points)
5. Your textbook has a website with self tests, and you may do ONE self test (either multiple choice, true/false, identification, etc) PER chapter, for every chapter we cover in class. Email me the results, but also either print out or email a copy to yourself as well. See your class syllabus for the URL of your textbook's website. (1 point per chapter)

IMPORTANT POLICIES (a.k.a. the “fine print”)

Your enrollment in this class indicates that you agree to abide by these policies!

- **Statement of Reasonable Accommodation:**
 - Pasadena City College faculty members fully support the Americans with Disabilities Act (ADA). Pasadena City College provides reasonable accommodations to facilitate the participation of students with qualified disabilities. Questions about, concerns with, and requests for reasonable accommodations or additional information may be addressed to Disabled Student Programs and Services (D209).
 - Reasonable accommodation may involve allowing a student to use an interpreter, note taker, or reader; accommodation may be needed during class sessions and for administration of examinations. The intent of the ADA in requiring consideration of reasonable accommodation is not to give a particular student an unfair advantage over other students, but simply to allow a student with disability to have an equal opportunity to be successful.

- **Student Conduct:**
 - Policy No. 4520: It is the policy of the Pasadena Area Community College District that Pasadena City College seeks to maintain a safe, orderly, and constructive campus environment in which there is freedom to learn and respect for the dignity of all members of the College community. Students are expected to be responsible, honest, and non-violent in exercising their rights to free inquiry and free speech.
 - The Student Conduct Code identifies conduct that is prohibited by College policy. Students who violate the Student Conduct Code will be subject to disciplinary action under the Student Discipline Process Procedures. Disciplinary sanctions depend on the nature of the offense, the past pattern of behavior of the student, and other relevant factors. In addition, student drug or alcohol offenses or other criminal acts, may be referred to law enforcement officials.
Cheating and plagiarizing will not be tolerated.

- Absences:
 - All absences are considered unexcused unless valid proof of the absences is submitted. All proof of excused absences MUST be shown PRIOR to the student making up the assignment/exam, and MUST be BEFORE the last day of class. Please contact me by email if you know you will be absent on a certain date, and why.
 - Students who miss a class due to an unexcused absence will NOT be allowed to make up the work. Make-up assignments will be given only to those who can verify a valid excuse for missing the assignment. The make-up assignment will given at a time that is mutually agreeable to both the student and myself.
 - Failure to take the make-up assignment within one week of the original assignment date OR before the last week of class will result in the missed exam//assignment counting in as a zero.

- **Grading:**
 - Pasadena City College policy allows a grade of incomplete to be given only to those who have been sick, injured, or have a similar valid excuse. A grade of “incomplete” will not be given after poor performance in the course.
 - Pasadena City College grading system guidelines can be found in the current catalogue. Students may access this catalogue online at <http://pasadena.edu/catalog/Section2.htm>.
 - College policy requires that all students shall be graded in *exactly* the same fashion. What does this mean? **You may not ask for extra assignments or to repeat an exam to improve your grade, or additional assignments after the course is completed.**
 - Grades in this class are based upon points earned on assignments, quizzes, and exams. All assignments will be returned to the student after grading. Periodic progress reports will be emailed to students so that they may keep track of their progress in the class. Students are responsible for contacting me BEFORE the final exam with any errors or omissions.
 - You may do up to 20 points of extra credit work to raise your total points earned (please see attached list). All extra credit is due the last day of class – not the day of the final exam. By doing extra credit you agree that you will NOT ask to have your grade “bumped up” at the end of the semester.
 - **Your final grade is based upon the points you EARN in the class. Thus, you do not “deserve” a certain grade – you earn it.**