**Introduction to Oceanography**

* Cabrillo College, Spring Semester, 2010
* Instructors: David Schwartz, Wayne Bloechl & Deirdre Scholar
  
  [http://www.cabrillo.edu/~dschwartz/](http://www.cabrillo.edu/~dschwartz/)

<table>
<thead>
<tr>
<th>LECTURE TOPICS</th>
<th>Text Assignments</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction to Oceanography</td>
<td>2</td>
<td>2/9</td>
</tr>
<tr>
<td>2. History of Oceanography</td>
<td>1</td>
<td>2/11, 2/16</td>
</tr>
<tr>
<td>3. Bathymetry &amp; Sea Floor Topography</td>
<td>4.1 &amp; 4.2</td>
<td>2/16, 2/18, 2/23</td>
</tr>
<tr>
<td>4. Sea Floor Spreading; &quot;The Origin of Ocean Basins&quot;</td>
<td>3</td>
<td>2/25, 3/2, 3/4</td>
</tr>
<tr>
<td>7. Winds, Currents and Ocean Circulation</td>
<td>portions of 7, 8 and 9</td>
<td>3/23, 3/25, 4/6, 4/8, 8</td>
</tr>
</tbody>
</table>

**MIDTERM is Tuesday 4/13 (AFTER SPRING BREAK):** It includes all lecture material through Topic #7, the textbook and labs 1 through 4

8. Waves........................................... 10 4/15, 4/20, 4/22


11. Glacioeustatic & Geoeustatic Sea Level Changes ..... Lecture only 5/4, 5/6

12. Shoreline and Coastal Processes........................ 12 5/6, 5/11, 5/13, 5/18


14. Life in the Water; Primary Production & Plankton... portions of 15 & 16 5/25, 5/27

15. Nekton & Ocean Resources, Pollution & Review............. 17 5/27

16. Comprehensive Final Exam is 10 a.m. - 12:50 p.m. in Room 450 6/1 (Tuesday)

**REQUIRED TEXTS:** Both required books are available at the Cabrillo College bookstore.


Important Spring Semester 2010 Lab and Information

PLEASE BRING COLORED PENCILS AND CALCULATORS TO ALL LABS.

It is also helpful to bring a “Flash Drive” to some of the later labs.

Everyone enrolled in this course is required to complete all lab exercises and take 6 lab quizzes by their respective deadlines. An outline of the lab schedule, all reports and projects and quiz dates will be given to you and will also be announced regularly in lecture and lab as the course progresses.

You must do lab work in your lab only. Students may not attend other Ocean 10 labs. Failure to comply with all due dates, deadlines and rules may result in loss of points.

SIX REQUIRED LAB PROJECTS: These projects will be due and collected for evaluation at announced deadlines. No late projects will be accepted and the student will receive a zero unless the student shows verifiable barriers (in hospital), death in family etc…

The following six lab projects are worth 120 points: (110 points if you are Beach Profiling since you are not required to do the “Mystery Beach” project.)

1. Bathymetric Map & Cross Section (Lab 2, 10 points)
2. Tectonic Map & Earthquake Plots from first 5 Labs (Lab 4, 20 points)
3. Beach Sand Chart (Lab 5, 10 points)
4. Tide Plot (Lab 7, 10 points)
5. Mystery Beach (Lab 8, 10 points. Optional if you are participating in the Beach Profiling Project.)
6. Beach Erosion Map (this is a semester long field project worth 60 points)

The following are other required Ocean 10 lab activities. These labs do not have any graded “projects” that you will turn in. Information from these labs will be covered on quizzes, the midterm and final exams.

- English / Metric Conversions & Sea Floor Geography (Lab 1)
- Nautical Charts (Lab 3)
- Waves (Lab 6)
- Marine Sediments, Plankton and Plate Tectonics (Lab 9)

ATTENDANCE AND PROMPTNESS:

Attendance is required at all class meetings. Missing only one lecture may put you seriously behind. Points may be lost for missing more than 4 lectures. Please arrive on time to the lectures! When people arrive late, it is a distraction to many. If you arrive late, quietly sit in the top three rows. Also we encourage you to stay the entire 3 hours of lab. If you do this, your success in the class will greatly increase.

REMINDER

It is each student’s responsibility to keep in touch / communicate with the instructors if you are experiencing difficulties / problems in Ocean 10. We have a strong support system: four Oceanography Instructors, daily office hours, a staff of helpful Student Assistants and a Math Lab that you are welcome to use.

Oceanography Department Office Phone: 479-6495
Cabrillo College Switchboard: 479-6100
Dave Schwartz’s Office Hours: M 12:30-1:30, T/Th 9-10am, W 5-6, Fri 12-1
Dave Schwartz’s Web Page: http://www.cabrillo.edu/~dschwartz/
Spring 2010 Ocean 10 Lab & Quiz Agenda Week by Week
There are NO LABS the first week of classes

Week 2 February 16 & 18: Introduction, Metric Conversions, Sea Floor Geography, earthquake plots.

Week 3 February 23 & 25: QUIZ #1 (on Lab #1, History, Geologic Time) start Lab #2 Intro to Bathymetry and Acoustical Soundings, work on Bathymetric Maps & earthquake plots.

Week 4 March 2 & 4: Continue and complete Lab #2 on Bathymetry and Acoustical Soundings, earthquake plots

Week 5 March 9 & 10: QUIZ #2 (on Acoustical Soundings, Lab 1 and Sea Floor Topography) start Lab #3 Nautical Charts, earthquake plots. Bathymetric Map and Cross Section due.

Week 6 March 16 & 18: Finish Lab #3 Nautical Charts, earthquake plots

Week 7 March 23 & 25: QUIZ #3 (on Nautical Charts only) start Lab #4 Cont Drift, SFS, Plate Tectonics, earthquake plots

+++++++++++++++ Week of March 29th is SPRING BREAK++++++++++++++++

Week 8 April 6 & 8: finish Lab #4, take QUIZ #4 at the end of lab (on Cont Drift, SFS, P. Tectonics & Marine Sediments). Tectonic Map / Earthquake Plots due.

+++++++++++++++Midterm is Tuesday April 13th++++++++++++++++

Week 9 April 13 & 15: Introduction to Lab #5 Beach Sand. Printed draft of Lines 1 & 2 are due for ALL Beach Profilers

Week 10 April 20 & 22: Lab #5 Beach Sand

Week 11 April 27 & 29: finish Lab #5 Beach Sand, start Lab #6 Waves.

Week 12 May 4 & 6: QUIZ #5 (on Beach Sand & Waves), start Lab #7 Tides. Beach Sand Chart due.

Week 13 May 11 & 13: Lab #7 Tides, start Lab #8 Mystery Beach, work on Beach Profile reports. Printed draft of Intro & Materials Methods is due for ALL Beach Profilers.

Week 14 May 18 & 20: QUIZ #6 (on Tides and Sea Level Changes), discussion of shoreline processes. Beach Erosion Map & Tide Plot are due.

Week 15 May 25 & 27: Lab #9 Marine Sediments

All Community Activities Reports are due within two weeks upon completion of the project. All Beach Profile Reports and Internet Research Reports are due in the last Lecture in Room 450 on Thursday May 27th. All projects must be printed, not hand-written. Failure to comply with all due dates, deadlines and rules may result in loss of points.
EVALUATION SYSTEM

Lab Quizzes (six) = ~170 points (~28%)
Lab Projects (six) = 50 - 60 points (~9%)
Midterm = 150 points (~25%) April 13th Room 450
Beach / Shore Erosion Map = 60 points (~10%) Due in lab 5/18 & 5/20
Final Exam = 150 points (~25%) June 1st 10:00 a.m. Room 450
TOTAL = 590 Points (580 Pts for Beach Profilers)

Optional Research Report = 40 points (see below for more details)

FINAL GRADE BREAKDOWN:
89% and above = A
79% - 88% = B
66% - 78% = C
55% - 65% = D
<55% = F

No make-up quizzes or midterm will be given unless there are verifiable barriers (death in family, hospitalization/illness etc.). Pass / Non Pass (P/NP) is a grade option in this course. If you decide for the P/NP grade option, a signed written agreement must be given to David Schwartz. The deadline for the P/NP decision will be announced in class. Remember, points may be lost for missing more than 4 lectures.

OPTIONAL RESEARCH REPORTS (worth 40 extra points): The Research Reports to choose from are the “Beach Profile Research Report” or the “INTERNET Research Report”. All require a final paper that will be due at the last lecture. We will give you some important information that will outline and describe the specific format that all the papers MUST be written in. This format will consist of an Introduction section followed by Materials / Methods, Results, Discussion and Conclusion. You can have one partner for the Beach Profile Research Report (one paper, two names, same grade). The INTERNET Research Report must be a solo effort. Students can not do more than one research report for increased credit. Deadlines to begin these projects will be announced in class.

All Research Reports must be printed (not hand written).

NOTE: The last day to start both Research Projects is Sunday February 28th.

IMPORTANT DATES FOR BEACH PROFILERS:
- Last Day to Beach Profile Line #1 is 2/28
- Last Day to Beach Profile Line #2 is 3/28
- Last Day to Beach Profile Line #3 is 4/25
- Last Day to Beach Profile Line #4 is 5/23
- Rough Draft of Lines 1 and 2 due in lab 4/13 – 4/15
- Rough Draft of Intro, Materials / Methods due in lab 5/11 – 5/13

Community Activity + Short Report: Anyone enrolled in Ocean 10 may choose to do the “Community Activity + Short Report” project. Upon successful completion of this project, 20 extra points will be added onto your final score. You can only earn the 20 points once. You will need to perform at least one full day (6 to 8 hours +, arranged on your own time) doing some type of community activity to earn 20 points. This activity must be verified and followed up with at least a one-page summary explaining the experience and relating it to the class. Working with Project MATE, Save Our Shores, Surfrider Foundation, The Coastal Watershed Council (CWC), Department of Fish and Game, Moss Landing Marine Labs, Long Marine Lab, CSUMB, Cal Poly, Cabrillo College Oceanography Department, attending seminars or going out to sea are some of our ideas. Also, anyone who successfully completes Ocean 20 will also receive the 20 points of extra credit. We encourage other ideas but all endeavors need to be approved by the Instructors before the work begins. The one page summary report is due two weeks (or sooner) after completion of the project.

All Community Activity reports must be “Typed” (not hand written).
Oceanography 10 is a “Learner Outcome” course.

Two Learner Outcomes have been defined and they are as follows:
1) Analyze and interpret spatial information and data concerning oceanography and construct and interpret maps, charts and graphs relating to geological, chemical, physical and biological oceanography.

2) Solve simple word and numerical problems about oceanography using linear equations and conversion factors.

The following is more information on specific activities associated with the identified Learner Outcomes for Ocean 10:

Activities associated with Learner Outcomes #1
a. Inspect the shore environment and construct a “beach-erosion map” displaying the spatial distribution of protective materials used by humans to retard wave erosion of coastal landforms. (Required semester long project)
b. Construct a bathymetric map and cross section. (Lab 2)
c. Demonstrate navigation techniques using standard nautical charts, parallel rules, hand compass and compass dividers. (Lab 3)
d. Collect and plot real time earthquake data for 5 weeks and recognize trends. (Lab 4)
e. Identify and examine the chemical makeup and general source of common beach sands from around the world. (Lab 5)
f. Survey beach profiles over the semester and interpret and display the results. (Optional research activity & report)
g. Construct a tide plot and analyze the general trends. (Lab 7)

Activities associated with Learner Outcomes #2
a. Calculate English / Metric conversion problems. (Lab 1, 2, 3, 4, and 6 and objective questions throughout the course)
b. Solve problems involving rate, distance and time associated with acoustics, navigation, sea floor spreading, waves, tides and marine sediments. (Objective questions throughout the course)
c. Calculate vertical exaggeration of cross sections given horizontal and vertical scales. (Lab 2 and objective questions throughout the course)

Accommodations are provided for students with verified disabilities. If you need any accommodations, please see me during an office hour and contact staff in: Disabled Student Services & Programs (DSS&P): 479-6379 Room 810 Learning Skills Program (LSP - for students with learning disabilities & attention deficit disorder): 479-6220 Room 1073, Learning Resources.
TENTATIVE LECTURE SCHEDULE
By Date

2/9  Introduction to Ocean Science
2/11 History of Oceanography
2/16 Finish History, begin Sea Floor Topography
2/18 Sea Floor Topography
2/23 Finish Sea Floor Topography, Ocean Basin Evolution
2/25 Ocean Basin Evolution
3/2  Ocean Basin Evolution
3/4  Finish Ocean Basin Evolution, Begin Marine Sediments
3/9  Marine Sediments, Intro to Lab #9 Beach Walk
3/11 Marine Sediments
3/16 Finish Marine Sediments, Sea Water Chemistry
3/18 Sea Water Chemistry
3/23 Finish Sea Water Chemistry, Ocean Currents
3/25 Ocean Currents

Spring Break Week of March 29th

4/6  Ocean Currents
4/8  Ocean Currents, + review
4/13 MIDTERM (Tues.) 11:10 a.m. - 12:30 p.m. in Room 450
4/15 Waves
4/20 Waves
4/22 Finish Waves, Tides
4/27 Tides
4/29 Finish Tides, Sea Level Changes
5/4  Sea Level Changes
5/6  Finish Sea Level Changes, Coastal Environment
5/11 Coastal Environment
5/13 Coastal Environment
5/18 Coastal Environment
5/20 Marine Biozones and Ecology
5/25 Primary Production & Plankton
5/27 Nekton, Ocean Resources and Pollution

6/1 Comprehensive Final Exam (Tuesday) 10:00am – 12:50pm, Room 450