Syllabus for: Laboratory in Oceanography	
Semester & Year:	**Fall 2013**
Course ID and Section Number:	**OCEAN-11-E3787 / E3788 (033788) / (033787)**
Number of Credits/Units:	**1**
Day/Time: **Location:**	**Tuesday, Thursday 11:40AM - 01:05PM** **Humanities Bldg, Room HU125**
Instructor's Name:	**Danny O'Shea**
Contact Information:	**danny-oshea@redwoods.edu**

Course Description: An exploration of the conceptual material presented in OCEAN-10. Students will acquire practical laboratory and field experience using oceanographic skills, tests, and procedures. Laboratory exercises focus on chart reading, measurements of seafloor movement, seawater chemistry, wave celerity, and microscopic analysis. Field experience includes examination of coastal geology, wave and beach processes, habitats and marine organisms. Note: This course includes field trips to various marine and coastal areas. The College does not provide transportation.

Student Learning Outcomes:

1) Make reasonable interpretations of scientific data.
2) Apply the scientific method to the critical evaluation of data and concepts.
3) Identify the underlying concepts and principles of oceanography and apply and interpret them in a variety of marine environments.
4) Discuss the relationships between physical and chemical environmental factors and the organisms and populations characteristic of an area.
5) Demonstrate the skills necessary to utilize basic instruments, tools, and tests used in oceanography.
6) Discuss the strengths and weaknesses of various data collection techniques, and evaluate the relative merits of specific techniques in different environmental situations.
7)Follow written and oral laboratory instructions.

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

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The student code of conduct is available on the College of the Redwoods website at: http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Oceanography 11 E3787 / E3788	**Fall 2013**	**TTh 11:40 a.m. – 1:05 p.m.**
Laboratory in Oceanography	**Danny O'Shea**	**Room HU 125**
	e-mail: danny-oshea@redwoods.edu	

Course Description: Oceanography 11 a one-unit laboratory course that augments the conceptual material presented in the Introduction to Oceanography (OCEAN-10) course. Students will acquire practical laboratory and field experience in many oceanographic skills, tests, and procedures. Laboratory exercises will focus on chart reading and navigational skills, basic measurements of seawater chemistry, and other processes. Field experience will include examinations of coastal geology, wave and beach processes, and marine organisms and habitats.

Syllabus

Week	Day-Month	Laboratory	Topics
1	**27 - Aug** **29 - Aug**	1) Latitude, Longitude & Time	Reading Charts
2	**3 - Sep** **5 - Sep**	2) Coastal Geology & South Humboldt Bay	*** Field Trip: Table Bluff** Beach Survey
3	**10 - Sep** **12 - Sep**	3) Plate Tectonics Magnetic Reversals	Rate of Tectonic Plate Movement
4	**17 - Sep** **19 - Sep**	4) Coastal Marine Sediments	Grain Size Analysis
5	**24 - Sep** **26 - Sep**	5) Salinity Temperature & Density	T – S Diagrams
6	**1 - Oct** **3 - Oct**	6) Marine Weather	Marine Weather Charts
7	**8 - Oct** **10 - Oct**	7) Water Masses & Ocean Circulation	Water Density and Stratification
8	**15 - Oct** **17 - Oct**	8) Estuaries	*** Field Trip to Arcata Marsh**
9	**22 - Oct** **24 - Oct**	9) Ocean Waves	Ocean Wave Prediction
10	**29 - Oct** **31 - Oct**	9) Tsunami	*** Field Trip: South Jetty**
11	**5 - Nov** **7 - Nov**	10) Seiche, Tides and Amphidromes	Movement of tides
12	**12 - Nov** **14 - Nov**	11) Primary Producers	Phytoplankton
13	**19 - Nov** **21 - Nov**	12) Zooplankton and Benthos	Zooplankton *** Trinidad Field Trip**
14	**26 - Nov** **28 - Nov**	Thanksgiving Day	No Lab
15	**3 - Dec** **5 - Dec**	**Final Project**	Poster Presentation
16	**12 - Dec**	Finals Week	

*** Indicates Field Trip. Be prepared for outdoor conditions such as sun, wind and rain protection.**

Course Learning Outcomes

1) Make reasonable interpretations of scientific data.
2) Apply the scientific method to the critical evaluation of data and concepts.
3) Identify the underlying concepts and principles of oceanography and apply and interpret them in a variety of marine environments.
4) Discuss the relationships between physical and chemical environmental factors and the organisms and populations characteristic of an area.
5) Demonstrate the skills necessary to utilize basic instruments, tools, and tests used in oceanography.
6) Discuss the strengths and weaknesses of various data collection techniques, and evaluate the relative merits of specific techniques in different environmental situations.
7) Follow written and oral laboratory instructions.

Grading:

Your performance on: the weekly laboratories, and field trips, group poster and presentation and lab participation determine the grade you receive. There are 1000 points available and grades are assigned by the percentage of total points as follows:

1000-940=A	939-900=A-	899-870=B+	869-830=B	829-800=B-
799-770=C+	769-730=C	729-700=C-	699-670=D+	669-600=D
				<599=F

Grading Summary:	**Points**
➢ Laboratories	360
➢ Lab journal and Illustrations	280
➢ Poster and Presentation	260
Total Points:	**1,000**

Oceanography -11/ Laboratory in Oceanography augments the Ocean-10 course, and culminates with a poster and presentation of the real-time oceanographic data collected during the semester. The oceanographic observations are derived form a variety of sources currently available for the Humboldt County coastline. The laboratory develops skills reading charts, using digital data loggers, collecting field observations, and interpreting laboratory and microscope data to evaluate and produce the final product. A primary goal of this class is to produce, as a group, a final project in the form of a poster that describing the region, the general oceanography setting, the type of substrates (mud, sand, rock), the influence of physical forces (winds, waves, currents,…) on water quality (temp, salinity, clarity), and the succession of the phyto- and zooplankton during the semester. The project will be worked on during the lab along with a series of demonstrations (labs) designed to help visualize some of the complex processes seen in the field. The product will be designed, written and completed by the students with assistance from the faculty and staff at College of the Redwoods.

Field sampling will take place each week with trips to Hookton Slough to collect water quality data, note oceanographic observations and collect plankton samples. You will need a journal to record your observations, insights and ideas from each field trip, and to contribute to the final project. Your notebook will record the basic observations, winds, temperatures, floods, etc. that occur during the semester and be part of your final grade. This data set will be summarized and put together by you toward the end of the semester.

Grading is based on lab attendance, field trip participation, lab notebook and your contribution to the final poster project. In order to successfully complete the lab work you will need a notebook, calculator, ruler, and writing supplies with an optional set of colored pencils (I have some). You will need to bring appropriate clothing for protection from Sun, Wind, and Rain during the field trips to South Humboldt Bay Area.

The following is a list of parameters to be included as part of the final poster.

1) Topographic and Bathymetric Profiles of the coastal hills, bay and ocean
2) Environmental description of the bay, sand spit, sea cliffs, and coastal seafloor
3) Beach survey the South Spit of Humboldt Bay 2 separate times in several locations
4) A plot of the tides and rainfall runoff and the water clarity of the South Humboldt Bay
5) Time series of the temperature, salinity, Secci depth
6) Observations of sea state conditions and the marine weather
7) Collection and identification of plankton samples
8) Observation of abundance and change of migratory fish, mammals, birds.

The poster will be a compilation of the field data, observations, events, and collected during the semester. The final product is a group effort, however, the grading will be based on the contribution of each individual. There are several components need to be included and so there is ample opportunity to contribute to the final poster. Some of the primary components that will go into the poster are: Title, Figures, Graphs, Illustrations, Figure captions, Poster Layout, Data processing, Research, References, and Final Production.

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Attendance/Participation

Participation is very important and absence will reflect negatively on your performance and final grade. Showing up late is very disruptive so please come to class on time. Likewise, if you need to leave the class early, please let me know before the class starts. Eating, drinking, texting, and chatting are social activities, and are best done outside the class. Thank-you.

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