

GEOL 410/510: Oceanography of the Oregon Coast

Information Sheet and Syllabus Winter 2014

Course website through Blackboard

Instructors	email	office hours	location
Dave Sutherland	dsuth@uoregon.edu	Wed. 1:00-3:00 pm (or by appointment)	204 Volcanology
Dustin Carroll	dcarroll@uoregon.edu	Tues. 1:00-3:00 pm	202 Volcanology

Lecture: Monday and Wednesday from 10:00-11:20 AM in room 202 Cascade (crn 28079/28080)

Lab: Thursday, 1-1:50 PM in room 218 Volcanology (need code)

Overview: This course is intended as an introduction to the physical processes that control ocean circulation on the Oregon coast. An alternative title could be “Introduction to Coastal and Estuarine Physical Oceanography”, as many of the concepts we learn are generally applicable. We will learn basic oceanographic concepts and apply them to phenomena observed off the Oregon Coast, which sits in the larger California Current system.

Note that this is a four-credit course with a lab section and is intended for upper level undergraduates (410) and graduate students (510). Knowledge of basic calculus is helpful—see the instructor if you have concerns about your math background.

Goals

- Attain a basic knowledge of oceanic processes occurring off the Oregon coast
- Identify dominant physical forcing that controls circulation in coastal and estuarine regions
- Improve reading ability of scientific articles (primary literature)
- Develop knowledge in one specific area of coastal/estuarine oceanography by writing a short research proposal
- Explore oceanographic concepts through laboratory exercises and analysis of real data

Textbooks (optional):

Introductory Dynamical Oceanography, 2nd ed., Pond and Pickard
Waves, Tides, and Shallow-water Processes, 2nd ed., The Open University

Additional reading that includes scientific articles and chapters from relevant books will be provided as needed to students and placed on Blackboard.

Important Dates *(***subject to change, check Blackboard and class announcements!***)*

- Field trip is mandatory: Saturday, Jan. 25
- Mid-term exam: Monday, Feb. 10
- Written proposals due: Monday, Mar. 10
- Presentations: week 10 (Mar. 10 and Mar. 12)

Research Proposals

Each student will develop a brief written research proposal on a topic of their choosing related to coastal and estuarine physical oceanography. During week 10, students enrolled in GEOL 410 will be grouped by their proposal subject matter and give short presentations of their proposals. Students enrolled in GEOL 510 will present individually. More information and guidance on choosing appropriate research topics, formatting the written proposal, and how to best present their projects will be given during week 2 in Lab.

Lab

This class includes a “lab” section that will be a mix of oceanographic visualizations, discussion, project prep time, and an extension of class material. Assignments given during the lab section will be due the following week during lab.

Dates	Lecture	Assignments/Tests	Reading
6-Jan 8-Jan LAB 1 (9-Jan)	1. Preliminaries; basic oceanographic concepts 2. Descriptive oceanography; basics cont. Stratification and density	In-class survey	In-class readings Knauss Ch.1, Ch. 2, HB 2003 pp. 1011-1014
13-Jan 15-Jan Lab 2 (16-Jan)	3. Intro to coastal ocean dynamics I 4. Intro to coastal ocean dynamics II Project introduction, group selection, initial meetings	Lab #1 due	PP Ch. 3, Ch. 4, Huyer 1990 pp. 423-438 PP Ch. 6, Knauss Ch. 5 Pechenik Ch. 10, Ch. 11
20-Jan 22-Jan LAB 3 (23-Jan)	5. MLK Holiday (no class) 6. Geostrophic flow; coastal currents Prep for field trip; intro to Coos Bay	Homework 1 due Proposal abstracts due	Knauss Ch. 6 (part)
25-Jan	FIELD TRIP TO COOS BAY		
27-Jan 29-Jan LAB 4 (30-Jan)	7. Coastal currents II 8. Ekman/Upwelling I Analysis of Coos Bay data		Hickey et al. 2009 Knauss pp. 122-128, CR Ch. 14 MATLAB intro
3-Feb 5-Feb LAB 5 (6-Feb)	9. Ekman/Upwelling II 10. Coastal ocean dynamics cont. Ekman lab	Homework 2 due Lab #4 due	Huyer 1983
10-Feb 12-Feb LAB 6 (13-Feb)	11. Midterm 12. Intro to estuaries; descriptive, observations Midterm critique		Dyer Ch. 2
17-Feb 19-Feb LAB 7 (20-Feb)	13. Estuarine dynamics I 14. Estuarine dynamics II Estuarine dynamics lab	Proposal draft due Lab #5 due	Open Ch. 6 MacCready and Geyer, 2010
24-Feb 26-Feb LAB 8 (27-Feb)	15. Tide gauges guest lecture (R. Weldon) 16. Marine reserves guest lecture (R. Hildreth) No lab, work on proposal and presentations		Komar et al. 2011 In-class handout Refer back to Pechenik and other resources from Lab 2
3-Mar 5-Mar LAB 9 (6-Mar)	17. Integrative topics I: hypoxia 18. Integrative topics II: bio-physical coupling Hypoxia discussion, reading	Homework 3 due Lab #7 due	Chan et al. 2008 Brown and Power, 2011
10-Mar 12-Mar LAB 10 (13-Mar)	19. Presentations (undergrads) 20. Presentations (grads) Presentation critiques and summaries	Final written proposals due	

No Final Exam.

Grading Criteria and Philosophy

If you get 90% or more of the total possible points, you will receive a grade of A- or higher; if you get 80% or more you will receive a grade of B- or higher; 70% or more a grade of C- or higher. What does this mean for you? If you do excellent work (in our judgment) you will get an A, good work earns a B, satisfactory work earns a C. Course grades are based on performance, not on effort, but it is rare that anyone who comes to class regularly, does the reading, and puts a serious effort into studying doesn't pass. Please note that if you take the class P/N you must get at least a C- to pass. The number of points needed for a given grade (e.g. the C- cutoff) may be lowered, but will not be raised.

Course component	Percent of total grade
Midterm	25%
Homework	25%
Written research proposal	20%
Proposal presentation	10%
Lab assignments and participation	20%
Total	100%

Classroom Conduct.

Please read this syllabus carefully and talk to Dave or to the GTF as soon as possible if you have questions about what is expected or how you will be graded.

We expect everyone to follow University rules and guidelines for behavior. Academic dishonesty, which includes cheating and plagiarism, is a serious offense and will be treated according to the guidelines in the [Student Conduct Code](http://studentlife.uoregon.edu) (located at <http://studentlife.uoregon.edu>) This doesn't mean you shouldn't talk with other students about what you are thinking or writing; it does mean that when you write something, it should be in your own words, not copied from someone else.

We ask that everyone do their best to be intellectually honest while also being respectful of personal differences. We welcome and encourage intellectual controversy-- it is essential to real learning. At the same time, we ask that everyone respect the rights of others to hold different opinions, even as we challenge the ideas supporting those opinions. The grade you earn will be a reflection of the quality of work you have done, but not of you as a person, nor of the values you hold.

Out of respect for other students, you should plan to arrive at class on time and stay until class is over. If, on occasion, you do arrive late, please be considerate of others and enter in such a way that you don't disturb other students. If you need to leave early, please sit near an exit so that you can leave without disrupting the class. We ask that you not interfere with the ability of other students to learn by making noise when others (instructors or classmates) are speaking or working. Cell phones should not be used in class. Failure to follow these guidelines may lead to a lowered participation score.

If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with Dave or the GTF soon. Please request that the Counselor for Students with Disabilities send a letter verifying your disability.

Crises happen. If you are having problems that are interfering with your ability to do the work in this class, please let us know promptly. We are willing to make special arrangements when the need is real **and** when you have done your best to deal with the situation in a timely manner. The University of Oregon Crisis Center, a student funded organization, provides students with confidential telephone crisis intervention 24 hours a day, 7 days a week. The hotline number is 346-4488. Students often believe that their issues are not "severe" enough for them to call a crisis intervention hotline. At the Crisis Center, there is no problem too small.