Geology 109, Oceanography; Sec# 4883

Fall Semester, 2013: 2:30-3:20 MWF

Bessey Hall Auditorium (BESS 118)

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| **Instructor:** | Dr. Mary Anne Holmes |
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| **Office Hours:** | feel free to email for an appointment for any other time |
| **Teaching Assistant:** |  |

**Goal of Course:** to enhance student understanding of global climate and habitat to be better informed citizens of the planet.

**Purpose of Course:** for students to learn:

* To think scientifically: to formulate hypotheses and to test hypotheses;
* To apply scientific thinking to understanding the world’s oceans, the world’s largest habitat and regulator of global climate;
* To understand the world’s oceans by learning about their chemical, physical, and biological processes.

# Course Philosophy

The oceans cover three-fourths of planet Earth and are critical habitats for most of the world's plants and animals. Oceans provide critical resources for humans, and have done so throughout human history. Understanding the oceans is key to understanding global climate and potential climate change, including global warming. Each American has a large impact on the world's oceans, largely through our use of ocean resources, particularly our drilling and transport of petroleum through the oceans. We need to understand how our everyday decisions affect the health of the oceans, and consequently, the health of the entire planet.

This course is intended to provide you with a beginning towards understanding the oceans, how they affect you, and how you affect them. After taking this course, you will be prepared to learn more, throughout your life, and to enjoy this unique water planet through a better understanding of it.

By the time class is done, over the next 16 weeks, you will learn:

* how our planet, the Water Planet, is unique in the Solar System, and can support life, thanks to the amazing qualities of the water molecule
* what sort of rocks and sediment make up the ocean floor and what these tell us about ocean history
* how the oceans have a profound impact on our planet’s climate
* how water circulates in the ocean, both across the oceans and within, down to the depths
* what a dynamic place the ocean’s shores are, and how humans attempts to live there
* what sort of plants and animals live in the oceans, how to recognize them at the shore
* the status of the ocean’s plants and animals: how pollution and human activity impacts them

This course is not conceptually difficult, but there is a LOT of material for you to master (the textbook, a standard used in most college and university 100-level Oceanography courses, is over 350 pages). **This requires that you spend some time (several hours) on your Oceanography notes *every week***, preferably every day. Aside from learning about the fascinating and critically important ocean environment, you will be gaining invaluable practice in learning to master a great deal of material in a short period of time. This may be the most useful tool you learn in your college career!

# ACE Certification

*Student Learning Outcome #4:* Use scientific methods and knowledge of the natural and physical world to address problems through inquiry, interpretation, analysis, and the making of inferences from data, to determine whether conclusions or solutions are reasonable.

You will have the opportunity to acquire this ability by attending the lectures, participating in in-class exercises and discussion of current events, and completing homework assignments. The lectures provide the content and context necessary for you to apply the material learned to in-class exercises and homework assignments.

Your achievement is assessed through three hourly exams and a comprehensive final, as explained under “Grading Policy”.

# COURSE SYLLABUS, 2006

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| Week of: | Topic(s): | Reading Assignment\*: |
| Aug 26 | The Scientific Method  History and Tools of Oceanography  Origin of the Earth and Oceans |  |
| Sept 2 | Earth Structure: what we know from earthquakes  Plate Tectonics |  |
| Sept 9 | A Tour of the Ocean Basin and their margins  A Brief History of the Oceans |  |
| Sept 16 | First Exam, Tuesday, September 12 Marine Sediments |  |
| Sept 23 | Seawater and Ocean Structure |  |
| Sept 30 | Seawater Chemistry |  |
| Oct 7 | Atmospheric Circulation Climate |  |
| Oct 14 | ***Second Exam, Tuesday, October 10***  Ocean Circulation |  |
| Oct 21 | ***Fall Break: No class Tuesday***  Ocean Circulation, cont |  |
| Oct 28 | El Niño, La Niña  The Conveyor Belt  Waves |  |
| Nov 4 | Waves, cont  Tides |  |
| Nov 11 | Tides, cont  Coasts and the Coastal Ocean |  |
| Nov 18 | Coasts, cont  Life in the Ocean: from being alive to the collective ecosystem |  |
| Nov 25 | ***Third Exam, Monday, November 25***  ***Thanksgiving Wed-Fri*** |  |
| Dec 2 | Pelagic Communities  Benthic Communities |  |
| Dec 9 | Benthic Communities, cont  Marine Resources: Petroleum, Minerals, Food  Things Out of Balance: Environmental Concerns |  |
| Dec 18 Wed | FINAL EXAM, COMPREHENSIVE,  **Wednesday, Dec 18,** 1:00pam - 3:00 pm  Anderson Hall Auditorium (same room as lecture) |  |

\*Textbook: *Essentials of Oceanography (10th Ed.),* Trujillo & Thurman; Pearson Publishing

# COURSE/GRADING POLICIES

You are responsible for knowing important dates on the Academic Calendar, such as drop days, last day to change grade type, etc. See your Schedule of Classes for these dates.

Find Information on drop/withdrawal dates on the University website: search “Academic Calendar”.

Grading Policy

YOUR GRADE will be determined by in-class exercises and **4 exams**, 3 of which are given during the semester and one given during finals week. See the course syllabus for dates of exams.

Note that increasing weight is given to exams as the course proceeds:

5% in-class exercises (there will be about 10 and we’ll count the top 8)

20% first exam

20% second exam

25% third exam

30% final exam

THE FINAL EXAM will be **comprehensive**: it covers the entire course, from Day 1.

Grades are determined as follows:

100 – 98% = A+

97 – 93% = A

90 – 92% = A-

87 – 89% = B

83 – 86% = B,

80 – 82% = B-, etc.

**NO MAKE-UPS** are given for ANY exam for any reason. If you cannot take an exam, contact the instructor BEFORE exam time.

To pass the course under the N/P option, you must have a minimum 73% average.

Extra Credit is possible via one of two alternatives:

**I.** Read one or more of the following books and write a 1-2 page synopsis of the book, relating what we discuss in class to what you’ve learned by reading the book. More information on what is expected from a synopsis is given below.

*The Longitude*, by Dava Sobel (up to 2 points)

*Rare Earth* by Peter Ward & Robert Brownlee (up to 4 points)

*Cod: A Biography of the Fish That Changed the World* by Mark Kurlansky (up to 2 points)

**II.** A small research project of interest to you. The topic may come from the news, it may be something you’ve always been curious about, or you may have extra questions over any ocean-related topic we discuss in lecture. You should ask a question about the topic, formulate a hypothesis and a way to test it, and **find data** to test your hypothesis. A two- to three-page write-up can earn you up to 8 points. **Your project must be approved by Dr. Holmes first or it will not be accepted for credit.** *It must include references from scientific journals –* ***not websites****.*

Dr. Holmes and your TA will gladly help with any aspect of your project. If you intend to do a research project, you must read the document covering scientific referencing and plagiarism that is on the course Blackboard site. You may not copy sentences from sources and put them in your paper un-altered and un-attributed. This constitutes plagiarism, which is subject to disciplinary action (see “Academic Honesty” below).

ALL extra credit assignments **must be submitted electronically** via Safe Assignment on Blackboard. The points for extra credit will be added to your final course average. DUE DATE: December 7.

Classroom Courtesy: turn off cell phones before entering class. If you have any questions during class, feel free to raise your hand and ask for repeats, clarifications, or to offer your own observations. Talking prevents other students from hearing and participating as they would like, so kindly refrain from doing so.

Be on time for class and stay through the entire class. Do not get up during class and walk out for any reason whatsoever, including bathroom or refreshment breaks. This is too distracting to your fellow students.

ACADEMIC HONESTY

**Academic Honesty is a requirement.** You are *individually* responsible for any assignment and every exam and quiz. Anyone confirmed in giving or receiving aid on any assignment (including those for extra credit) or exam whatsoever will receive an "F" for the course. No exceptions whatever.

Students in this class are expected to abide by the UNL Student Code of Conduct, provided in the UNL Undergraduate Bulletin, “Student Rights and Responsibilities”. Section 4.2 of the Code states "The maintenance of academic honesty and integrity is a vital concern of the University community. Any student found guilty of academic dishonesty shall be subject to both academic and disciplinary sanctions."

According to the Code, academic dishonesty includes, but is not limited to: cheating; fabrication and falsification; plagiarism; abuse of academic materials; complicity in academic dishonesty; misrepresentation to avoid academic work; and other actions listed in the Undergraduate Bulletin. All forms of academic dishonesty are not acceptable in this course and will not be tolerated.

In addition, Principle IV, Rule E. of the ASHA Code of Ethics states that “individuals shall reference the source when using other persons’ ideas, research, presentation, or products in written, oral, or any other media presentation or summary.”

If any of the terms regarding academic dishonesty are unclear to you, please feel free to ask your Instructor about them.