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| **Nova Southeastern University**  **Farquhar College of Arts and Sciences**  **Division of Math, Science, and Technology**  **Course Syllabus (2013)** | nsusunlogo-blue |

**Last Date Revised: 5/30/13**

1. **COURSE TITLE**

*Essentials of Oceanography / Lab*

Jan. 7- May 3, 2013

1. **INSTRUCTOR:** Judy Robinson
2. **COURSE DESCRIPTION**

This introductory course for the marine biology major exposes students to basic principles of physical, chemical and geological oceanography. This course should help students to achieve a greater understanding of the ocean, its processes and its impact on the biology of the ocean. Information to be covered:

* Formation and structure of ocean basins (plate tectonics, continental margins, deep abyssal plains, ridges and trenches;
* Geochemistry of seawater (physical properties of water, salinity, identification of water masses based on density, the physical description of ocean surface (waves, and tides),
* General oceanic circulation patterns (fluxes of energy at the ocean-atmosphere interface, drift and geostrophic currents, thermohaline circulation);
* Air-sea interaction (Coriolis-effect, oceanic heat flow and atmospheric circulation)
* Biological oceanic populations as a function of diverse physico-chemical variables (dissolved and particulate matter, nutrient cycles, particulate fluxes and marine sedimentation);
* Theoretical aspects of oceanography will be followed by regional case studies of coastal systems and an introduction to the state of the environment in the Oceans (i.e. sea level rise, contamination, oil spills, fisheries exploitation).

1. **LEARNING OUTCOMES**

* Students should be able to interpret and evaluate the work of scientists who have contributed to our understanding of oceanography through history.
* Students should be able to illustrate and identify the major currents of the world's oceans.
* Students should be able to interpret atmospheric and oceanic circulation systems as well as analyze their interconnections and driving forces on major Earth processes, such as atmospheric and oceanic circulation, climate and weather, plate tectonics.
* Students should be able to evaluate the principles involved in the generation of waves and tides and their effects on coastal processes and marine ecosystems.
* Students should be able to interpret how physical, chemical, geological and biological processes effect the distribution and function of marine organisms in the ocean.
* Students should be able to construct scenarios of a rise in sea-level, contamination or exploitation on coastal zones as well as formulate possible mitigation and adaptation strategies.

## REQUIRED TEXTS AND MATERIALS:

**TEXT:** Sverdrup, KA and EV Duxbury. 2009. *An Introduction to the World’s Oceans*, 10th ed. McGraw-Hill Companies Publ.

ISBN-13: 9780073376707

**LAB MANUAL:** You can access laboratory exercises on Blackboard.

A dedicated, lined notebook with pencils and erasers are required for laboratory notes and drawings.

**Blackboard ACCESS:** You must be able to access the site for this course through Blackboard to view lecture notes as well as read assignments. The address is: <http://mako.nova.edu/>. You must have a working Nova e-mail account including username and password (same as for checking your e-mail at your NSU account). To make sure that you can view the material at this website try going to the website and logging in. If you do not, or have any difficulty doing this, e-mail me, tell me, or contact a computer lab assistant and the University computer help desk (262-4357).

1. **COURSE REQUIREMENTS AND POLICIES**
   * Students are expected to attend all lectures, labs, and exams. Absence from class will adversely affect your grade since you will not be present to hand in assignments and you will miss course material. There will be no make-up quizzes or laboratories unless exceptional conditions occur. In the case of a truly exceptional condition, PRIOR permission from your professor is required.
   * Contact your professor as soon as possible if you have an emergency that is causing you to miss a lab, test or quiz, or you may be unable to make up the missed work. Expect to provide documentation of your emergency.
   * All assignments are due at the beginning of the class indicated in either lecture or laboratory sessions. LATE ASSIGNMENTS WILL NOT BE ACCEPTED except under approved emergency circumstances.
   * I expect you to make clear to me when you don’t understand something, preferably by asking questions in class, where other students will also benefit from clarification. Alternatively, come see me before or after class or send me a note via email. You should never feel that a question is too trivial (especially if you have tried to study it on your own for a little while first). If you already understood everything about biology, you wouldn’t be taking this course.
   * A great strategy for success in this course is to attend every class meeting, pay attention during lecture, take careful notes and review your notes to be sure that they are clear and consistent. It’s a good idea to rewrite your notes or make flash cards from your notes with the material worded in the form of questions. It is also a good idea to write yourself practice tests using the course material and then take them without looking at your notes.
   * Partners in the lab can only share the data they jointly produce, but each student needs to complete the lab report, including data analysis and report writing, independently and individually.  Producing the lab report in any joint effort or fashion by lab partners will be considered plagiarism.

What You Can Expect of Me:

My overall goal is to create a comfortable, interactive, and supportive learning environment. In doing this, you should expect me to be well prepared for both the lecture and laboratory sessions; that I am clear about my expectations for you and the criteria that I use in assigning grades, and that everyone in the class is treated with consideration and respect. If you feel that I am not living up to these expectations, please bring it to my attention ASAP; you will not be penalized for helping me become a better teacher. I want to help you become an active learner.

1. **DESCRIPTION OF CLASS ASSIGNMENTS**

1. **Exams (45% of final grade):** Three unit exams @ 15% each will cover the chapters indicated and will be given during an entire class period (50 minutes). Each exam will consist of approximately 25 questions including a variety of fill in the blanks, short answer and essay questions.
2. **Quizzes (10% of final grade):** Four scheduled quizzes will be given during the first 20 minutes of class on the scheduled dates. Quizzes may consist of a variety of fill in the blank, short answer, multiple choice and matching style questions.
3. **Final Exam (20% of final grade):** The Final Exam will be cumulative and will cover material from the entire course. Emphasis will be placed on material covered in previous exams.
4. **Laboratory Reports and Notebook (25% of final grade):** Be sure to make entries and complete exercises in your laboratory notebook. These notebooks will be reviewed during and at the end of the semester and graded based on completeness and quality of content. Laboratory reports will be due for each lab completed.

#### **GRADING CRITERIA**

#### Three lecture exams @ 15% each 45%

Cumulative final exam 20%

Quizzes 10%

Laboratory reports 20%

Laboratory notebook 5%

Total 100%

1. **COURSE SCHEDULE AND TOPIC OUTLINE**

Class schedule subject to modification, but not without prior notification. **Any changes will be announced in class and posted in the full syllabus online on Course Wizard.**

**LECTURE**

WEEK OF: TOPIC Text Chap \_\_\_\_\_\_\_\_\_

Jan 7 Introduction; History of Oceanography

Jan 14 The Ocean: Origins and Provinces; **Quiz 1**

Jan 21 & 28 Plate Tectonics; Marine Sediments

**Jan 28** **EXAM 1**

Jan 30 Properties of Water; Seawater chemistry

Feb 4 Ocean basin; **Quiz 2**

Feb 11 Ocean and Our Climate; Heat budgets

Feb 18 Ocean circulation

Feb 20 Ocean Currents

**Feb 25** Mid-Term Week (**Exam 2)**

Mar 4-8 **Spring Break**

Mar 11 Tides and Waves Tides

Mar 18 Coastal Ocean and Geology **Quiz 3**

Mar 25 & Apr 1 Inhabitants of marine waters; Spectrum of lifestyles:Pelagic, Benthos, Reefs. and Vents

## Apr 8 EXAM 3

Apr 15Overview ofBiogeochemistry of Life (N, P, C, O) Ocean Productivity and Energy Transfer; **Quiz 4**

## Apr 22 Class Discussions

## Climate variability: An Ocean View

## Population Impacts on Coastal Ecology and the Open Ocean

Apr 29 **FINAL EXAM**

**LABORATORY**

WEEK OF: TOPIC\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Jan 7 Introduction; Nautical charts: Latitude, Longitude, and World Maps

Jan 14 Nautical charts: Bathymetry of the Ocean Floor

Jan 21 **No Labs**

Jan 28 Marine Sediments

Feb 04 Field trip

Feb 11 Seawater Chemistry and Salinity

Feb 18 Density

Feb 25 **Midterm Week / No Labs**

Mar 04 **SPRING BREAK**

Mar 11 Currents and Waves

## Mar 18 Hydrothermal Vents

## Mar 25 Phytoplankton

## Mar 01 Zooplankton

Mar 08 Benthos

Mar 15 Taxonomic Classification of A SUBSET OF Marine Organisms

**Mar 22**  Laboratory reports due

One full weekend (2 days, 1 nights) field trip will be spent in the Florida Keys observing biota and abiotic environment.

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