**Dr. A Castro - Science Teacher**

**Hope High School**

Tutoring hours on Thursdays from 3 to 4 pm

Classroom 320.

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**Oceanography Syllabus for Semester Classes:** 2014-2015 academic school year.

**Textbook: []**

**Course Description:** Students will study oceanography as a science from many different aspects. Chemical, physical, and geological oceanography will be explored. Students will study not only the ocean but water systems, coastlines and marine life including plants, algae, vertebrates and invertebrates. Students will complete hands-on as well as virtual labs. Students will research and share their findings using projects, written and oral reports, and power point presentations. The course also focuses on ocean exploration/history, ocean policies with regards to fishing, pollution, and the environment, and why the study of oceanography is important to you.

Therefore this course will incorporate multidisciplinary instruction using topics from biology, chemistry and general sciences.

**What will the student learn while taking this course? / What is the purpose of this course?**

Students will need to understand many very important societal issues which involve our oceans. The important problems include:

* Global change and the role of the ocean the earth system.
* Overfishing.
* Coastal erosion, storm surges, tsunamis. Think of New Orleans and Sumatra.
* Coastal development and pollution.

Other Key questions addressed in this class are:

What is global warming (heating) and what should we as a society do in response to future warming?

– How much will earth warm? How much will sea level rise? How will the ocean influence these processes? – Who should be responsible for the cost of rebuilding coastal structures destroyed by hurricanes? What is the current trend with coastal Pollution: – How bad is it? Is it a problem? – What can be done to mitigate pollution?

**Additional Information**: My web page DrCastro.weebly.com. The students can see more web resources in the website. The syllabus is posted on the website and the web page will be dynamically updated.

**Classroom procedures course policies**

* Come to class every day, enter class quickly and quietly.
* Be on time, punctuality is essential to doing well in this course.
* Behave in a respectful manner that does not cause problems for anyone.
* As soon as you are seated write the learning objectives and then begin your DO NOW, which will be written on the smart board. You have five minutes to complete the DO NOW.
* You may use the bathroom between classes; if you have an emergency you must completely fill out the hall pass sheet, which includes your name, date, time and destination.
* Keep a binder for all your homework, tests, DO NOWS, hands outs, projects, writing assignments, group work.
* When you are absent or late, it is your responsibility to get the notes or missed work on your time. After every 3 absences a phone call will be made. Late work is never accepted without an excused absence.
* Cutting classes will be penalized as one detention after school for each cut.
* Do not eat or drink in class ever. Only water is allowed. Follow the safety regulations during laboratory activities or procedures.
* No electronic devices in class, no hats, no coats.
* There is no talking during a test or quiz even if you are finished. A respectful volume should be maintained in the classroom at all the time. Every student deserves to have the best possible testing conditions; any disrespectful behavior will negatively impact your grade.

**Required Resources**.

Safety glasses are required for all laboratory activities, a notebook, flash drive, pen or pencil, computers (lab tops) and textbooks will be provided by teacher during classroom time.

**Grading Policy and Procedures**.

**Your work in this class will be assessed in the following ways:**

1. Class Work and Participation (30%)

Each day you will earn class participation points for work completed in class, successful group participation, on-time completion of homework, quizzes, discussion, focus and appropriate behavior. Absences, sleeping, lateness, unpreparedness, lack of focus and lack of respectful behavior will result in loss of credit. Asking good questions and volunteering may earn extra class participation points.

Bring in documentation for excused absences – notes stamped by the attendance office will restore your lost class participation points– this helps your grade. Note: All work must still be made up.

2. Open Notes Tests and quizzes (35%)

The key elements of critical and scientific thinking are asking questions and making observations. Expect homework every week, occasional quizzes, and be prepared to hand in all assignments to be graded.

Open Notes Tests will assess class work after completing every unit. You will be asked to answer questions that should be found in class notes and completed assignments. You may also be asked to turn in randomly selected samples of your work from the period between tests. Failure to immediately make up work you have missed will result in poor scores on tests. If you haven’t done it, you can’t use it. You may use only your own work for Open Notes Tests.

3. Projects (35%).

Major projects will comprise an important part of the assessment for this course. Treat them like important tests – failure to complete or hand in major projects may result in failing this class. Project products may include: class presentations, research papers, Lab notes, Lab reports, Prezi or PowerPoint presentations.

* Final grades are calculated on the following: class work and participation 30%; Open notes tests 35%; projects 35%.

**Course Schedule / General Course Outline/ Assignment Descriptions**.

Unit 1: Investigation and Experimentation

**Main Questions**

What are the steps of the scientific method and how can we apply the scientific method to perform investigations?

How can we keep ourselves and others safe in the lab?

What is the nature of science?

**Main Concepts**

I. The Scientific Method

Asking Questions

Hypothesis

Logic

Theories

Analysis

Drawing Conclusions

Analyzing Results

II. Conducting Meaningful Investigations

Unit 2: Origins of the Earth

**Main Questions**

What is the Big Bang Theory and what evidence is there to support the theory?

What is the Nebular Hypothesis?

How did the Earth form?

How did the oceans and atmosphere form?

Why do we speak European languages?

What are the major oceans?

**Main Concepts**

I. The formation of the Universe

A. The Big Bang Theory

B. Evidence

II. The formation of the Solar System

A. The Nebular Hypothesis

III. The formation of the Earth

A. Protoearth

IV. The formation of the atmosphere and Oceans

A. Water from space

B. Outgassing

C. Condensation

V. The Oceans of the World

A. Arctic

B. Indian

C. Atlantic

D. Pacific

VI. Early Ocean Exploration

A. Polynesians

B. Indians

C. Chinese

D. Europeans

Unit 3: Plate Tectonics and Ocean Basins

**Major Concepts:**

I. Plate Tectonics

A. Volcanoes (my photos)

B. Mountains (my photos)

B. Earthquakes

C. Faults

II. Evidence for Continental Drift

A. Alfred Wegener

III. Evidence for Plate Tectonics

A. Earth’s magnetic field and paleomagnetism

1. How this is recorded

B. Sea floor spreading

C. Plate tectonics accepted by the late 1960s

IV. Earth structure (How do we know this stuff?)

A. Earth is divided into three main layers chemically

1. Crust, Mantle, Core

B. Earth divided into five main layers physically

1. Lithosphere, Asthenosphere, Mesosphere, Outer core, Inner core

C. Isostatic adjustment (before and after)

V. Plate boundaries (Overview-USGS)(Animations)

A. Divergent

B. Convergent

C. Transform

VI. Some applications of plate tectonics

A. Mantle plumes and hotspots

B. Seamounts and tablemounts

C. Coral reef development (atoll development)

D. Using satellites to detect plate motion

E. Paleoceanography

F. Future positions of continents and ocean basins deduced through plate tectonics

* [Unit 4: Marine Sediments](http://www.csun.edu/~aes15831/subjects/Oceanography/unit4/index.html)
* [Unit 5: Physical Properties of H20](http://www.csun.edu/~aes15831/subjects/Oceanography/unit5/index.html)
* [Unit 6: Sea Water Chemistry](http://www.csun.edu/~aes15831/subjects/Oceanography/unit6/index.html)
* [Unit 7: Circulation of the Ocean and Atmosphere](http://www.csun.edu/~aes15831/subjects/Oceanography/unit7/index.html)
* [Unit 8: Waves](http://www.csun.edu/~aes15831/subjects/Oceanography/unit8/index.html)
* [Unit 9: Tides](http://www.csun.edu/~aes15831/subjects/Oceanography/unit9/index.html)
* [Unit 10: Coasts](http://www.csun.edu/~aes15831/subjects/Oceanography/unit10/index.html)
* [Unit 11: Marine Productivity and Resources](http://www.csun.edu/~aes15831/subjects/Oceanography/unit11/index.html)
* [Unit 12: Marine Environmental Concerns](http://www.csun.edu/~aes15831/subjects/Oceanography/index.html)

Videos:

Through the wormhole

Human planet

The blue planet

Understanding Oceans