PHYSICAL AND BIOLOGICAL OCEANOGRAPHY

2018– 2019 Course Expectations and Syllabus

New West Charter High School Ms. Erin Borgstrom
Website:msbscienceclass.weebly.com
E-mail: eborgstrom@newwestcharter.org

Course Expectations:

Oceanography is designed to present students with the fundamentals of physical oceanography and marine biology and to help students gain a greater understanding and appreciation the world oceans and the life they contain. This course emphasizes scientific observation, hands-on laboratory work, critical thinking, and the use of technology.

Course Objectives:

- ★ Understand the basic physical and chemical properties of the world's oceans.
- ★ Develop awareness, knowledge, and understanding of the ocean's relationship to the total environment.
- ★ Demonstrate an understanding of various scientific methods and how they are used.
- ★ Cultivate an awareness of the diversity and complexity of life in the oceans.
- ★ Demonstrate an understanding of the different types of reports used in science, including laboratory notes and reports, research papers, field notes and field reports.
- ★ Develop engineering and problem solving skills by designing and building a remotely operated underwater vehicle (ROV).
- ★ Demonstrate the ability to maintain a marine aquarium.
- ★ Develop ability to use computers and other technology as a learning tool.

Instructional Methods:

Students work individually and in groups. Students work in groups for laboratory activities and major projects. Working in groups gives students an opportunity to develop strategies to succeed within a variety of group dynamics.

Course material will be present in a variety of different ways, including, but not limited to, lecture, group and class discussion, hands-in labs, computer simulations, and group and individual projects. This course allows students to choose their path to mastery by completing activities designed to appeal and develop multiple intelligences and ways of learning. Remember, you are the learner; I am just your tour-guide through the world of the ocean!

Extended Class Activities

- ✦ Projects: Research in the area of Oceanography and visual presentations of topics learned in class. These may involve performance assessments, model building, poster presentations, web pages, podcasts, or PowerPoint presentations created by a team of students.
- ✦ Engineering Design Project: Student teams will design and engineer a oceanography tool, such as an ROV
- ✦ Laboratory Dissection: There will be several laboratory dissections in order to introduce students to the anatomy and physiology of marine organisms.
- ✦ Field Trips: Several school day field trips will be arranged during the year to allow students to put the methods and information learned in class to use in the field. Field trip attendance is mandatory.

COURSE EXPECTATIONS

Course Materials:

- ★ Textbook: Mrs. Borgstrom's Oceanography Website and *supplemental materials*
- ★ 1 inch 3-ring binder- **BRING TO CLASS EVERY DAY!**
- ★ 6 Dividers for binder
- ★ Lined paper
- ★ Pencil and pen
- ★ Ruler
- ★ Colored pencils

Cell phone use is NOT permitted in class. Turn them off and put them away.

General Class "Rules"

- **Be respectful to yourself and others**
- **Use lab materials safely and correctly**
- **Actively engage in your learning**

OCEANOGRAPHY UNIT SUMMARIES

Fall Semester	Spring Semester
Unit 1: Introduction to Oceanography • History • Taxonomy • Scientific methods • Ocean regions	Unit 6: The Temperate Ocean Shore • Moon phases • Tides types and patterns • Rocky intertidal ecology • Sandy intertidal ecology
Unit 2: Ocean Depths • Earth Structure • Pressure • Hydrothermal vents	Unit 7: The Tropical Shore • Coral characteristics • Reef ecosystems • Human impact
Unit 3: The Epipelagic • Winds and currents • Storms and hurricanes • Physics of buoyancy • Plankton	Unit 8 : The Open Ocean • Open ocean habitats • Fish species and adaptations • Human impact of fishing
Unit 4: Estuaries • Properties of water • Estuary structure and • Seabirds • Human impact	Unit 9 : Marine Mammals • Mammal characteristics • Mammal taxonomy • Marine mammal adaptations
Unit 5: Surf Zone • Wave formation and structure • Surfing • Seaweed • Kelp forests	Unit 10 : Human Impact on the Ocean • Climate Change • Chemical pollution • Plastic solution • STEM research

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COURSE EXPECTATIONS

Course Activities

Quizzes: Quizzes will consist of multiple choice questions, short answer, and critical thinking and analysis questions. Material on the quizzes will include readings and homework, lecture, in class activities, and labs. If you miss a quiz because of an EXCUSED absence, **you must make-up the quiz the day return**, unless you make special arrangements with me. If you earn a quiz grade **lower** than **60%**, you may retake the quiz. Your final quiz score will be an average of your original score and your new score. The quiz retake must be taken within ONE WEEK of the original quiz. **You cannot retake a quiz during class time**. You must make arrangements to take the quiz before or after school, during a free period, or during lunchtime.

We will not have a drop test/quiz.

Oceanography Final Project: There will be an oceanography final project the incorporates scientific research, design, and presentation. More information on the project will be given at a later time.

Extra Credit: Extra credit opportunities are **very** limited. Students will be graded on successful completion of course content.

Labs: Each unit of Oceanography includes several hands-on laboratory activity. Lab activity point values will vary according to the complexity of the lab performed. Labs are due the class period following the completion of the lab activity. See lab guideline and grading handout for more information.

Performance Assessment: Student will periodically be asked to apply their Oceanography knowledge in a real world situation. These group and individual activities require students to think creatively, use digital tools, and communicate effectively.

Unit Portfolio: Students will compile a portfolio for each unit of study. The portfolio includes homework assignments, notes, labs, and various creative assignments that help students understand and practice unit content. All assignments and activities for the unit being studied will be compiled into a unit portfolio which will be turned in on the day of the last day of the unit. See Portfolio evaluation handout for information on grading. **Late unit portfolios will not be accepted!!** If you are absent, it is your responsibility to find out what you missed; check the schedule on the website, ask a fellow class member, or ask me!

LATE WORK: NOT ACCEPTED

Grading:
Grades will be assigned in the following weighed categories and recorded in Infinite campus.

Category	Percent of Grade
Performance Tasks Design challenges, group projects, and performance based assessments	20%
Science Engineering Practices Inquiry, dissection, and online simulation lab activities	20%
Core Ideas Practice Portfolio work	20%
Assessment Quizzes and non-performance based assessments	20%
Semester Final/Project	20%

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