



Chesapeake Bay Governor's School
Student Information for Marine & Environmental Science II
RCC MAR 101-102, 4 credits/semester, 8 credits total
1 high school credit
Mrs. Bethany Smith

Warsaw Campus, Fall and Spring 2016-2017

CBGS-Warsaw: (804) 333-1306; Monday-Friday 7:30 am – 3:00 pm

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Course Objectives

Students will be able to: identify geological features of the ocean floor; predict tectonic behavior based on geological structures; understand geological processes and sources for deep ocean and coastal sediments; explain biogeochemical relationships between water column processes and sea floor sediments; predict outcomes of ocean acidification based on chemical equations and empirical data; discuss biological pump and ocean carbon cycle significance in the global carbon cycle; predict future effects of anthropogenic influence on global carbon cycle in ocean. Students will examine and understand basic physics of ocean motion including waves, tides, surface and deep water ocean circulation.

Students will generate hypotheses and execute scientific methodology; identify and operate basic scientific sampling equipment in a safe, appropriate manner. Students will use computers to analyze data, create graphs, do word processing and create PowerPoint presentations. Scientific research and writing will be emphasized as well as public speaking; students will give formal presentations of their work.

Course Learning Sequence:

Wk 1: Introduction to Oceanography- history of oceanographic research

Wk 2&3: Hurricanes and Air-Sea Interactions

Wk: 3&4 Coastal Geomorphology- Waves, Beaches, Tides- OBX trip

Wk 5: Bathymetry: structure and origin of the ocean basins, sea floor structures, plate tectonics

Wk 6,7,8: Marine Geology and the Sea Floor -sediments, distribution and sources, mineral resources of the sea floor, issues of human exploitation of sea floor resources

Wk 8,9,10: Marine Biogeochemistry- ocean sediments and biogeochemical cycling in the oceans, primary production and nutrient dynamics, marine snow, carbonate buffering, ocean acidification and the Carbon cycle

Wk 11-16: Global Oceanic Circulation- Deep and Shallow water ocean circulation: Coriolis, Ekman, the Global Ocean Conveyor Belt, upwelling, ENSO. Related Marine Hydrokinetic Resources- Hydropower, Wind and Wave Farms, Global Ocean Circulation and Marine Debris

Wk 17-21: Evolution and the Origin of Marine Phyla, Microevolution and Macroevolution in marine taxa

Wk 22&23: Marine Primary Producers, phytoplankton to macroalgae

Wk: 24&25 Marine Environments and Organisms- Rocky Coasts, and Coral Reefs

Wk 26: Open Ocean Ecosystem- the Pelagic Realm and Deep Sea

Wk 27-29: Methods in Marine Science Research- data analysis, science writing and presentation

Wk 30 -36: Marine Biology and Taxonomy – Cnidaria, Mollusca with dissections

Arthropoda- with dissection, Fisheries and Common Pool Resources

Marine Vertebrates- Cartilaginous and Bony Fishes, Marine Mammals and Reptilia

Texts: Introduction to Oceanography, Thurman and Burton
 Marine Biology, Peter Castro and Michael E. Huber

Required Materials: A 3-ring binder or folder and notebook devoted solely to Marine & Environmental Science. You should have dividers so you can separate sections for notes/handouts, and graded papers. You should also have pens & pencils and a calculator handy. You will also need a composition bound notebook to

serve as your journal and a “write in the rain” notebook (this will be your field notebook), this MUST be taken on all field trips. After certain field trips/activities I will collect and grade your journal and/or field notebook.

A Schoology account that you check regularly. Schoology is the means through which CBGS course information, announcements and grades are communicated to you. Please set-up your Schoology account to notify you of new postings, and check it frequently so you will always have access to the most up-to-date information. I will post notes, hand-outs, activities and assignments there. Additionally, you may also have assignments to submit through Schoology and occasional quizzes to complete there. You can also send me messages through Schoology.

Course Expectations:

- 1.) Be respectful of your fellow students and instructor. Listen carefully to your colleague’s thoughts and ideas. We will foster a learning community through which we can all learn from each other.
Additionally, be careful stewards of the environment and the organisms living in it while on field trips.
- 2.) Follow school rules, treat equipment carefully, and follow instructor’s safety rules in the lab and field.
- 3.) Come to class every day on time and ready to participate! You should be prepared for all class discussions and debates and ready to take notes and ask/answer questions as they arise.
- 4.) In the field, you should be prepared to get wet and dirty, and make sure to bring your adventurous attitude.
- 5.) Use Schoology to access course information, notes, assignments, reminders and your grades. You can also use Schoology to communicate with me.

Grading: Your quarter/semester grade will be based on a point system. You can determine your average by taking the points you earned and dividing them by the total possible points. An end of semester exam (test, paper, project) will count as 10% of the semester grade. The CBGS grading scale is listed in the CBGS Student Handbook. Your grades on assignments will be posted in Schoology. Stay on top of your assignments! There will be a 2 point per day late penalty for all work turned in late. Work submitted more than 1 week late, or classwork turned in after we have gone over it in class will generally result in a completion grade of 50 %.

Attendance: Attendance is required in both class and on field trips. If you are absent you are responsible for your missed assignments. Get any notes you missed from a friend or from Schoology, and be sure to check for any handouts and assignments. Check Schoology, you should be able to easily figure out what you missed. Make all efforts to get to class on time. Excessive tardies disrupt your learning as well as the class.

Make-up Work: Assignments that were due the day of your absence are due the day you return to school. Some assignments may have Schoology submissions and can be submitted even in your absence. Exams/quizzes are due within 1 week of your return. It is your responsibility to schedule a time for a make-up exam or quiz. If you need more time, or have an extended absence, please talk to me so we can make arrangements to work with you.

Homework/Projects: You will not usually receive daily homework in M&E II. Many times you will begin an assignment in class and be asked to finish it or do some follow-up questions in time for our next class meeting. I will post assignments and worksheets to Schoology as well. If you are absent on the due date, the assignment is due the day you return, even if we do not meet for class (hand to me or put in my mailbox)

Cell Phone Policy: All cell phones and other electronic devices should be silenced and stowed during lecture/lab/field trips. They are not to be taken out or used during any of these times unless approved by the instructor. Please review the cell phone expectations in the student handbook.

Honor Code: Academic honesty, respect, trust, integrity, and responsibility are underlying core values that support the Honor Policy and Honor Pledge of the Chesapeake Bay Governor’s School. Failure to abide by the Honor Policy will result in disciplinary action as detailed in the Honor Policy in the Student Handbook.