

Foundations of Science- 2007-2008

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Course Description: *This course will explore earth science systems with an emphasis on the Chesapeake Bay watershed. The class will be technology based using science methods and data collection with the GLOBE computer program. Students will be challenged throughout to think creatively about environmental problems and to communicate effectively, both in their writing and in oral presentations. Students will explore the ecology of the Chesapeake Bay watershed while camping, hiking, and kayaking on both day and overnight field trips.*

Texts: *Encounters with the Archdruid*, John McPhee (summer reading)

Living in the Environment, Miller (14th edition)

Introductory Oceanography, Thurman and Burton

Turning the Tide, Horton

The World's Oceans, Sverdrup, Duxbury and Duxbury

Required Materials: 3-ring binder with dividers and paper for note taking, blue/black pens, pencils, Graphing calculator, Composition bound notebook (this will serve as a field notebook and journal and must be taken on all field trips).

Course Expectations: 1. Be respectful of your colleagues and instructors always and respectful of the environment and critters when out in the field.
2. Follow school rules, treat equipment with care, and observe proper safety measures both in class and in the field.
3. Be in class every day, ready when class starts and PARTICIPATE! You cannot learn simply by osmosis, you need to be engaged, asking questions and taking notes. In the field, a can-do, adventurous attitude is a must, remember, mud is a GOOD thing.

Grading: Your grade will be based on the following percentages:

Tests	25%
Projects	25
Classwork/Homework	25
Quizzes	15
Participation	10 (this is both for classroom and especially in fieldwork)
	100 %

Attendance: Attendance is required, if you are absent, it is your responsibility to make up any missed assignments, and get notes. Make-up work is due within 2 days of your return to class and tests or quizzes must be made up THE DAY you return. A deduction of one letter grade/day late will be assessed for late work. Please contact me if you will be missing class so we can avoid any problems and make sure you can keep up.

Foundations of Science- Syllabus 2007-2008

Unit 1: Introductory Geology

- Origins (Big Bang, oceans, atmosphere, life)
- Plate Tectonics (Cont. Drift, Seafloor Spreading, Boundaries)
- Earth Spheres (Lithosphere, Hydrosphere, Atmosphere, Biosphere)
- Rocks & minerals
- Rock cycle processes (erosion, weathering, deposition...)
- Earth History (fossil record, absolute and relative dating)
- Climate Change and Sea level Change, isotope record, paleoceanography
- Maps – (Lat/Long, Hurricane plots, bathymetric maps. Topo maps)
- Geologic History / Geologic Provinces of Virginia

Unit 2: Watershed Dynamics

- Water Chemistry / Properties
- Watershed Controls (Hydrology, Geology, Climate)
- Geochemical Cycles (Water, Carbon, Nitrogen, Phosphorous, Sulfur)
Sources, Sinks and Processes
Watershed mapping
- Stream monitoring / Water Quality
- Spatial / Temporal studies
- Water usage by Humans
- Bay Eutrophication, Water Pollution / Toxins / Sewage

Unit 3: Chesapeake Bay Watershed

- Chesapeake Bay Watershed mapping
- Cultural/Historical changes in watershed region
- Biological profile of Bay / Estuarine Processes
- Introduction to Key Ecological Concepts- Ecosystems (Terrestrial and Aquatic)
Communities, Populations Dynamics, Food Webs, Biomes, Succession
- Present-day Bay (human impact, population, "Global Watershed
- The Scientific Method and Research, Experimental Design and Statistical
Analysis

Unit 4: Case Studies of Local and Global Environmental Issues

- Environmental topics of concern (population growth, solid waste, energy use, sewage, development and land use, food resources, sustainability, endangered species, invasive species)....

Tips for Success: Become an "active" learner, be ready to take notes and listen, ask questions to make sure you understand concepts, don't be a wallflower! Read over your class notes everyday to make sure you understand everything, if not, follow up. Don't just copy verbatim every word, listen to the lecture so that you understand and try to take effective notes. Stay organized in your notebook and discipline yourself to keep up with assignments- don't let yourself get behind ! It is a slippery slope once you lag....

Chesapeake Bay Governor's School for Marine and Environmental Science
Glenn's Campus