

Advanced Environmental Science (AES) Syllabus: Marine Science Emphasis
(course available for 3 Credits of Thomas College science requirements)

Instructors

Mr. David Consalvi – Science and Technology

Course Description

This course was developed by student request and designed to give students the opportunity to pursue interests in the environmental sciences field for future study in college or just to gain greater understanding of our exciting environment. The course is an upper level examination of the human, geologic, biologic, chemical, and physical properties impacting the environment. The marine environment will be a primary research focus. A major goal of the course is to develop research, independent study, communication, and writing skills. With this goal in mind, this course is writing intensive and will require additional time out of school for students to be successful.

AES students will have the opportunity to receive college credit from Thomas College. This course will run in concert with Thomas College's 3-credit course. The course differs significantly from the general high school course with respect to the kind, depth, and scope of material covered. The material will have more complicated and detailed information to improve the content exploration. The laboratory experiences will be extensive to provide access to exciting, hands on investigations of the topics.

AES will be a writing intensive course that will require students to maintain a journal throughout the course. The students will also have out of class readings and associated projects that must be completed throughout the course.

Students should expect the time out of class to require from 1/2 to 1 hour of homework per day averaging 3 to 7 hours of homework per week. Students will be expected to keep up with all assignments and will not receive extensions without prior authorization from the instructor. This course has a high degree of independent study to ensure that enough material has been covered prior to the field studies in Southern Maine and Bermuda. Students who fail to maintain an 80 or better for each reporting period during the course will lose their opportunity to travel on the field trip to Bermuda.

Another requirement of the course will be to help raise funds to cover the expense of the trip to Bermuda and Southern Maine. Students will work collectively to do fundraisers and write grants to support the course. An important part of most scientific endeavors is to obtain funding for the project and this course is no different. Because of this real world connection, students' ability to work together to support the project will be a 10 percent of their score.

*****Because of the financial requirements of the course, only students committed to the project should enroll.

Prerequisites:

Completion of at least one full credit of science with no quarters less than a C in the most recent course. Biology is strongly recommended. Students who have not successfully completed a year of biology will need to complete additional work to keep up with their peers.

Enrollment:

This course is limited to 5 spaces for the Bermuda field study and 2 spaces for alternates, so enrollment will be competitive. Students interested in this course must submit a completed application prior to June 5, 2006. Interviews will be set up during the period from June 6th through June 9th. Applications received after June 5th will be considered on a first come first serve basis. Once the course is full no more applications will be accepted.

Text: (there will be a \$15.00 fee for the books)

Marine Science, Thomas F. Greene, 1998, Amsco School Publications, Inc.
Ishmael by Daniel Quinn
My Ishmael by Daniel Quinn
The Tempest by William Shakespeare
Additional Resources as Assigned

Topics:

- Exploring the Oceans (1)
- Marine Scientists at Work (2)
- The World of Water (3)
- Bacteria and Unicellular Algae (4)
- Marine Algae and Plants (5)
- Introduction to Marine Animals (6)
- Animals with Stinging Tentacles (7)
- Worms & Soft-Bodied Animals (8,9)
- Animals w/ Armor & Spiny-Skin (10,11)
- Fishes, Marine Reptiles & Birds (12,13)
- Marine Mammals (14)
- Marine Environments (15)
- Geology of the Ocean (16)
- Climate and the Ocean (17)
- Ocean Temperature and Pressure (18)
- Light and Sound in the Sea (19)
- Tides, Waves, and Currents (20)
- Interdependence in the Ocean (21)
- Pollution in the Marine Environment (22)
- Conservation of Marine Resources (23)
- Additional Material as Needed to Fulfill the ENV250 Requirements

Major Laboratory Investigations:

- Water Analysis
- Determining Seawater Salinity
- Dissolved Oxygen
- Identification and Classification Lab
- Bacteria Lab

Projects / Investigations

- Bermuda Field Studies (TBA)
- Southern Maine Field Studies (TBA)
- Eastport Field Studies (yr long)
- Phytoplankton Monitoring (TBA)
- Saltwater Aquarium Maint. (yr long)
- Website Development for Data Management and Communication (yr long)
- Independent Research Project

English Component:

Students will maintain a reflective journal and complete exercises that enhance their reflective thinking skills. The reading component will enhance the learning experience and give a greater range of content to draw upon in their writings. Students will be required to write a research paper with in-text citations and a work-cited list over an area concerning preserving the environment / natural resources. Additionally, students will be writing laboratory reports over their investigations.

Materials

Text (may be kept home), USB memory storage, Journal, Binder (class notes, homework, labs, Quizzes, Tests) pencils, pens, computer access (access is available at school – students without computers at home will need to take advantage of after school time to work on computers or find alternate arrangements).

Additional requirements may be added to ensure proper integration with the Thomas College program.