



***Department of Teaching & Learning***  
***Parent/Student Course Information***

***Oceanography***

***(SC 4250)***

***Online (SCO 250)***

***One credit, one year***

***Grades 10-12***

*Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.*

**COURSE DESCRIPTION**

Oceanography is a laboratory-oriented course in which students are involved in an in-depth study of the physical, chemical, geological and biological aspects of the oceans. Field studies and investigations of local, regional and national issues and concerns are required components of the course. Students also explore the relationships of oceanography to their interests, to career opportunities and to the historical contributions of science. Topics include oceanographic instruments; the chemistry of sea water; ocean sediments; weather and climate; waves, tides and currents; life in the oceans; habitats; maritime heritage; and current issues created by the interaction of science and technology.

**COURSE GOALS**

- Develop an understanding of the marine environment
- Develop the major physical, chemical, geological and biological concepts of the seas and coastal world through classroom activities, laboratory investigations and field studies
- Strengthen problem-solving and decision-making skills through science activities and issue investigations
- Develop an understanding of the economic importance of the seas and how to manage and conserve marine resources

**PREREQUISITE**

Earth Science

**OPTIONS FOR NEXT COURSE**

Chemistry (Algebra II prerequisite or co-requisite)

Physics (Algebra II prerequisite or co-requisite)

Advanced Placement Environmental Science (Biology and Chemistry prerequisite)

Advanced Placement Biology (Chemistry and Biology prerequisite)

Advanced Placement Chemistry (Chemistry prerequisite)

Advanced Placement Physics 1 (Algebra II/Trigonometry prerequisite)

Advanced Placement Physics C: Mechanics (Algebra II/Trigonometry and Calculus pre-requisite)

Biology

Astronomy (Earth Science and Geometry prerequisite)

**MATERIALS**

The teacher will use Classroom in Context (CLiC), which is a set of online resource databases, as well as

supplementary materials to teach, extend and enrich the students' understanding of course topics. These materials may be drawn from daily newspapers, periodicals, television and other visual media, primary source documents, simulations, computer programs and other online educational resources.

### **MINIMUM REQUIREMENTS**

- Demonstrate knowledge and understanding of all core objectives through laboratory investigations, issue investigations, projects, oral and/or written tests, quizzes and reports
- Participate in the core laboratory experiences and adhere to all safety procedures
- Prepare written reports for core laboratory activities
- Investigate and report on an issue of local, regional, national or global concern; suggest possible solutions; design a plan of action for solving the problem
- Design and conduct at least one experiment; interpret and report the results
- Investigate and report on career opportunities and areas of interest in oceanography
- Set up and maintain a saltwater aquarium
- Select, read and critique a marine science trade book
- Read and share current literature on relevant topics

### **The Knowledge, Skills and Attitudes that Comprise the Oceanography Course are Summarized as Follows from the Prescribed Curriculum:**

- Investigate the historical contributions of individuals towards the discipline of oceanography
- Set up and maintain a saltwater aquarium
- Demonstrate safe practices in the classroom, laboratory and field
- Explain the importance of an estuary system with emphasis on the Chesapeake Bay
- Explain the theory of plate tectonics and relate it to crustal movements and geologic features of the Earth
- Describe features of the ocean floor to include continental margins and the ocean basin
- Relate satellite imagery to the topography of the ocean floor
- Differentiate between various marine sediments based on size, shape and origin
- Explore the hydrothermal vent system
- Describe the factors that affect the physical and chemical properties of water
- Interpret the relationship between depth and pressure and the effect on marine organisms
- Analyze sea water to determine its chemical composition
- Describe global and local wind patterns to include sea breezes, monsoons, hurricanes and tornadoes
- Discuss the Earth's atmosphere and problems associated with man's influence
- Identify and describe ocean currents and the reasons they exist
- Classify waves and compare different types of waves
- Identify the forces that create tides and describe tide patterns
- Describe and compare coasts and beaches based on their shoreline features
- Describe shoreline effects to include longshore currents, rip currents and man-made features
- Examine the barrier islands and their importance
- Identify the factors that control primary production of the oceans and analyze the energy flow
- Classify marine organisms according to physical similarities
- Classify oceanic zones and describe the organisms of each
- Investigate representative groups of organisms from ocean and beach environments
- Examine coastal habitats for their physical characteristics, plant and animal populations and man's effect on the habitats
- Evaluate the importance of coastal planning near wetlands or estuary systems
- Investigate global environmental issues as they relate to the marine environment

### **CORE AREAS FOR LABORATORY EXPERIENCES**

- Safety
- Data collection

- Charts/graphs/tables interpretation
- Field study
- Aquarium set-up
- Coastal habitats
- Plate tectonics
- Coastline changes
- Measurement skills
- Chemical composition of sea water
- Physical factors of sea water
- Atmospheric circulation
- Ocean currents
- Tides and waves
- Identification and classification of organisms
- Food webs
- Adaptations of marine organisms
- Fish populations
- Land use simulations

Dr. Aaron C. Spence, Superintendent  
 Virginia Beach City Public Schools  
 2512 George Mason Drive, Virginia Beach, VA 23456-0038

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 For further information please call (757) 263-1070.

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