



Department of Teaching & Learning
Parent/Student Course Information

Advanced Science
(SC 4106)
One year
Grade 6

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

Advanced Science 6 is a rigorous, activity-based physical science course involving students in the exploration of chemistry and physics. Students will utilize experimental design to conduct scientific investigations. Major topics of study will include matter and energy, force and motion, heat, light, sound and earth science. A variety of instructional approaches including technology integration and inquiry-based learning will be used to help students develop an understanding of the role of science in their lives. This course is recommended for highly motivated students with strong mathematics and reading and writing skills.

Students who successfully complete this course may be recommended for Advanced Life Science in Grade 7. These students will take the Grade 8 Science Standards of Learning (SOL) test at the end of grade 7. Students passing this test will be eligible to take Earth Science in Grade 8.

COURSE GOALS

- Provide a broad content base in physical science
- Develop problem-solving and decision-making skills through experimentation, research and discussion
- Develop an understanding of the interdisciplinary nature of science and its relevance to society
- Develop communication and technology skills
- Complete selected advanced activities and labs
- Provide reading and study skills

PREREQUISITE

Fifth grade science and a teacher recommendation for advanced science

OPTIONS FOR NEXT COURSE

Advanced Life Science 7

REQUIRED TEXTBOOK

Pearson Prentice Hall: *Physical Science, Virginia Edition* (2004)

MINIMUM REQUIREMENTS

- Demonstrate knowledge and understanding of objectives through hands-on activities, projects, oral and/or written tests, quizzes and reports
- Participate in the hands-on investigations, adhering to all safety procedures
- Demonstrate the ability to conduct independent science investigations

- Demonstrate an understanding of the role of technology in science

The Instructional Objectives that Comprise the Grade 6 Advanced Science Course are Summarized as Follows from the Prescribed Curriculum:

- Demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. **(SOL PS.1)**
- Demonstrate safe and appropriate use of tools and scientific equipment for making observations. **(SOL 6.1)**
- Use process skills to solve problems, answer questions and provide explanations. **(SOL 6.1)**
- Conduct scientific investigations that incorporate unit objectives. **(SOL 6.1, PS.1)**
- Describe the movements of the earth, sun and moon. **(SOL 6.8)**
- Describe the gravitational effects of the sun and moon upon the earth's environment. **(SOL 6.8)**
- Construct and explain various models that illustrate the structure of an atom. **(SOL 6.4, PS.3)**
- Use the periodic table for obtaining information about elements and compounds. **(SOL PS.4)**
- Explain and illustrate the formation of compounds by the bonding of elements. **(SOL PS.4)**
- Investigate the basic nature of matter in order to identify characteristics and examples of various types of matter by their physical and chemical properties. **(SOL 6.4, PS.2)**
- Investigate chemical changes and the relationship between chemical change and the laws of conservation of matter and energy. **(SOL 6.4, PS.5)**
- Identify the characteristics of acids and bases by their physical and chemical properties. **(SOL 6.4, PS.2)**
- Identify sources of energy. **(SOL 6.2, PS.6)**
- Classify the forms of energy involved in energy transformation. **(SOL 6.2, PS.5)**
- Investigate the basic principles and applications of work, force and motion. **(SOL PS.10)**
- Investigate the properties of heat. **(SOL PS.7)**
- Identify the basic characteristics of mechanical waves. **(SOL PS.8)**
- Investigate the basic characteristics and applications of sound waves. **(SOL PS.8)**
- Investigate the basic characteristics and applications of light. **(SOL PS.9)**
- Investigate the characteristics and applications of electricity and magnetism. **(SOL PS.11)**
- Determine electrical energy consumption using common units. **(SOL 6.2, PS.11)**

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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