

**CHEMISTRY**

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

Chemistry is the study of the structure, composition, properties, and reactions of matter. Laboratory investigations are the primary means for developing problem-solving skills and for developing the major concepts and principles of chemistry. Chemistry provides students with a solid foundation for future study and with an understanding and appreciation for the nature of chemistry, the work of chemists, and the interactions of science, technology, and society. Students will take the Standards of Learning (SOL) test for Chemistry. Specific dates for the SOL test will be announced by the school.

COURSE GOALS

- Develop a foundation of chemical concepts and principles for understanding the structure and properties of matter and for understanding the interrelationships among the basic concepts of modern chemistry
- Develop investigative skills in order to solve real problems
- Apply the processes of rational thought to make responsible decisions about issues resulting from the interactions of science, technology, and society
- Explore the application of chemical principles in modern life, in careers, and in other areas of interest

PREREQUISITE

Algebra II (may be taken concurrently)

OPTIONS FOR NEXT COURSE

Physics (Algebra II prerequisite or co-requisite)

Advanced Placement Environmental Science (Biology and Chemistry prerequisites)

Advanced Placement Biology (Biology and Chemistry prerequisites)

Advanced Placement Chemistry (Chemistry prerequisite)

Advanced Placement Physics (Algebra II/Trigonometry prerequisite)

Biology

Earth Science

Oceanography (Earth Science prerequisite)

Astronomy (Earth Science prerequisite)

REQUIRED STUDENT TEXTBOOK

Modern Chemistry, Davis, Frey, Sarquis (Holt, 2009)

MINIMUM REQUIREMENTS

- Demonstrate knowledge and understanding of all core objectives through laboratory investigations, issue investigations, oral and written quizzes, tests, and reports
- Participate in the core laboratory experiences and adhere to all safety procedures
- Prepare written reports for core laboratory experiences
- Investigate and report on a topic in biochemistry, nuclear chemistry, organic chemistry, or environmental chemistry
- Read and share current literature on relevant topics

THE INSTRUCTIONAL OBJECTIVES THAT COMPRISE THE CHEMISTRY COURSE ARE LISTED AS FOLLOWS FROM THE PRESCRIBED CURRICULUM:

- Investigate and understand that experiments in which variables are measured, analyzed, and evaluated produce observations and verifiable data.
- Investigate and understand that the placement of elements on the periodic table is a function of their atomic structure.
- Investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations.
- Investigate and understand that chemical quantities are based on molar relationships.
- Investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles.
- Investigate and understand how basic chemical properties relate to organic chemistry and biochemistry.

Core Areas for Laboratory Skills and Experiences

- Safety
- Laboratory techniques
- Use of instrumentation
- Measurement
- Chemical and physical changes
- Periodicity
- Types of chemical changes
- Use of solubility tables
- Determination of an empirical formula
- Percent composition
- Law of Conservation of Mass
- Mole relationships
- Models for shapes of bonds
- Phase changes (e.g., heating curve, heat of fusion, specific heat, melting-freezing point, solids)
- Molar--volume relationships
- Solutions (e.g., solubility curve, freezing-point depression and boiling point elevation, conductivity, selectivity of solvents)
- Heat of reaction
- Chemical equilibrium
- Properties of acids, bases, and salts
- Titration (acid-base)



VIRGINIA BEACH CITY PUBLIC SCHOOLS

A H E A D O F T H E C U R V E

MISSION STATEMENT

The Virginia Beach City Public Schools, in partnership with the entire community, will empower every student to become a life-long learner who is a responsible, productive and engaged citizen within the global community.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

2512 George Mason Drive P.O. Box 6038

Virginia Beach, VA 23456-0038

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Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write The Department of Curriculum and Instruction, Director of Secondary Instructional Services, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038, Telephone (757) 263-1070 or (757) 263-1429, fax (757) 263-1412.