



Reavis High School

Chemistry I Curriculum Snapshot



Unit 1: Introduction to Chemistry, Scientific Method, and Measurement

25
Days

Students will learn the safety rules and proper use of laboratory equipment and demonstrate competent laboratory skills throughout the school year. Through scientific research, experimental design, and application, students will identify and apply the steps of scientific reasoning. Students will be able to analyze/manipulate qualitative and quantitative data and express results in a proper scientific manner.



Unit 2: Matter - Properties and Changes

15
Days

Matter is the general term that describes anything that takes up space and has mass. By classifying matter, scientists are able to develop models and generalizations that lead to a better understanding of how samples of matter interact. By the end of this unit, students will be able to classify matter (substance vs. mixture) and discriminate between the states of matter. Students will distinguish (by appropriate methods) between physical and chemical properties and changes by examining the structures and behaviors of matter and also use separation techniques to separate the different types of matter in a given sample.



Unit 3: Atomic Structure

20
days

The study of the development of the modern atomic theory will provide students with an understanding of the experimentation, analysis, and collaboration among scientists necessary for the development of a scientific theory. With the understanding of the modern atomic theory, students will be able to compare and contrast atoms based on properties and characteristics and apply mathematics as necessary for atomic analysis. Through experimentation, students will understand the relationship between matter and energy. Students will understand the origin and types of nuclear radiation and illustrate this understanding through the writing of nuclear decay equations.



Unit 4: The Periodic Table

20
Days

The periodic table is an essential instrument for all chemists. In this unit, the students will study the origins and organization of the periodic table. Students will look at the patterns and trends of properties of the elements and the general characteristics of the periodic table. Because the electron plays a significant role in determining the properties of the elements, the arrangement of the electrons in each atom (i.e., electron configurations) will be learned. The students will also use the periodic table to determine how the elements come together to form compounds.



Unit 5: Chemical Reactions and Energy

15
Days

Chemistry is the study of matter and its changes. In this unit, the students will learn how scientists use symbols to represent chemical interactions between matter. The students will learn about the different types of chemical reactions and the role energy plays in chemical reactions. Calorimetry is a technique that is used to study energy changes in reactions and will be used to determine the energy of a reaction (heat of reaction).



Unit 6: Chemical Bonding

25
Days

Bonding is the "glue" that holds particles together. Students will learn about different types of bonding including covalent, ionic, metallic, and network covalent. Students will be able to draw Lewis Structures of molecules and use the diagrams to predict the geometry of the molecule. Because molecular geometry determines many physical and chemical properties, the students will use the shapes of molecules to predict the properties of molecular compounds.



Unit 7: The Mole and Stoichiometry

20
Days

Stoichiometry is the study of quantities in chemical reactions. The students will use dimensional analysis, a mathematical strategy, to solve problems regarding the quantities in chemical reactions. Also included in this unit is the study of empirical formulas, percent composition, and limiting reactants. A strong background in math is useful for this unit.



Unit 8: Gases and the Gas Laws

15
Days

The students will study the Kinetic Molecular Theory and its relevance to the study of gases. Students will be able to describe the properties of gases and understand the difference between gases and the other states of matter. The Gas Laws will be used to make predictions regarding the behavior of gases. In addition, the students will read phase diagrams to determine how temperature and pressure affect a substance's state of matter.