Chemistry (1 of 2)

Course Description:

Chemistry (1 of 2) examines basic principles and properties of matter to see its everyday uses. Topics include atomic models, predicting chemical reactions to see how scientists can engineer them to solve problems.

Course Objectives:

- Apply scientific processes to conduct an investigation.
- Use logical thinking to identify relationships and draw conclusions.
- Evaluate topics in chemistry to better understand the basics of matter and atoms, how the elements are organized, how and why chemicals react to form new substances, the calculations and purposes of stoichiometry, and how chemistry impacts individuals and society.

Required Materials:

In course.

Course Overview:

Unit 1 Atoms
In this unit, students focus on atoms. They learn about the components of an atom, isotopes and ions, the properties of matter, and how to classify matter.

Unit 2 The Periodic Table
In this lesson, students learn about orbitals and sublevels. They also explore electron configuration.

Unit 3 Bonding
In this unit, students are introduced to chemical bonds. They learn about the structure and properties of metals. They also discover ionic compounds and their properties. The unit ends with a look at covalent bonds and compounds, as well as an explanation of how to understand molecular models.

Unit 4 Molecules
In this unit, students learn about molecules, focusing on covalent bonds and models, as well as covalent compound properties. They will discover different bonding theories such as Lewis, VSEPR, valence bond, and molecular orbital theories.

Unit 5 Chemical Nomenclature and Reactions
In this unit, students study chemical nomenclature and reactions. They will interpret reaction equations and discover how to balance them. Towards the end of the unit, the students look at many different types of reactions, including displacement, combustion, synthesis, and decomposition.

Unit 6 Stoichiometry
In this unit, students learn about the mole concept and use it to solve particle and multistep conversion equations. They study mole ratios and solve stoichiometry problems. They also learn how to compare reactants, find the limiting reactant, and how to calculate theoretical yield, actual yield, and percent yield.