Chemistry (2 of 2)

Course Description:

This Chemistry course expands upon a basic understanding of chemistry. Students will start by examining the properties of matter, including the types of bonds and forces that hold atoms and molecules together. After that, they will explore the states of matter, phase changes, gas laws, and properties of solutions. Then they'll learn about the thermodynamics and kinetics of chemical reactions, including why some reactions give off heat, while others consume it. They will also look at chemical equilibrium and electrochemistry. Finally, they will explore types of radiation and radioactive decay, as well as the difference between nuclear fission and fusion. At the end of this course, students will be able to evaluate the ethical, social, and economic implications of chemistry-related technologies.

Course Objectives:

- Apply scientific processes to conduct investigations.
- Use logical thinking to identify relationships and draw conclusions.
- Examine how investigations in chemistry are important to gaining historical perspective and understanding the societal value of scientific advances.
- Evaluate topics in chemistry to better understand matter, phase changes, gas laws, solutions, thermodynamics, reaction kinetics, equilibrium, radioactivity, and radiation.

Required Materials:

In course.

Course Overview:

Unit 1: Properties of Matter
In this unit, students focus on the properties of matter. They learn about the kinetic theory of matter, bonding and polarity, states of matter, and changes of state. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.

Unit 2: Phase Changes and Gas Laws
In this unit, students learn about phase changes and gas laws. They discover what the phase changes are. They also learn to recognize and solve problems using the gas laws. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.

Unit 3: Solutions
In this unit, students are introduced to solutions. They learn about the properties of solutions and the properties of liquids. They also learn about the concept of concentration. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.

Unit 4: Thermodynamics and Reaction Kinetics
In this unit, students learn about thermodynamics and reaction kinetics. They focus on enthalpy, enthalpy calculations, and entropy. They also discover reaction kinetics, rate, and rate laws. This unit concludes with a project in which they experiment to determine the effect that increasing concentration or temperature has on the rate of a reaction. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.

Unit 5: Equilibrium
In this unit, students study equilibrium. They discover how to define equilibrium. They interpret reactions to identify equilibrium shift and different types of equilibrium. They also learn to recognize oxidation and reduction in reactions and are introduced to electrochemistry. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.

Unit 6: Chemical Applications
In this unit, students discover chemical applications. They learn about the types of cells. Then, they are introduced to radioactivity and radiation. They also study nuclear reactions and nuclear energy. This unit includes a discussion board, so make sure to remind students to provide their opinions in a respectful manner.