

CHEMISTRY II (Grades 11th – 12th)

Two-Semester Course

Prerequisite: Satisfactory completion of Chemistry I

Chemistry II is for those students whose career interests lie in chemistry, physics, biology, molecular biology, medicine, engineering or related fields. Topics explored include chemical bonding, kinetic-molecular theory, thermo-chemistry, acid-base theories, equilibrium, reaction kinetics and organic chemistry, which include basic nomenclature and synthesis.

A-1 Science as Inquiry and Process

SA Students develop an understanding of the history and nature of science

SA 1 Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and define scientific arguments

SA2 Students develop an understanding that the processes of science require integrity, logical reasoning, skepticism, openness, communication, and peer review

SA3 Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and that local applications provide opportunity for understanding scientific concepts and global issues

Grade Level Expectations

The student demonstrates an understanding by:

[11] SA.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, analyzing data, developing models, inferring and communicating

[11] SA1.2 reviewing pertinent literature, hypothesizing, making qualitative and quantitative observation, controlling experimental variables, analyzing data statistically and using this information to draw conclusions, compare results to others, suggest further experimentation, and apply students' conclusions to other problems

KGBSD Student Objectives

K- SA1.1 Predicting periodic trends of the periodic table, observing trends of periodic table, measuring properties of elements, classifying the properties in relation to the trends, make generalizations, develop models to explain trends, infer to extend the trends of the periodic table, and communicate the trends and the data that supports the trends

K-SA1.2 Hypothesizing as to experimental results, making observations of results and controlling experimental variables of experiment, analyzing the resulting data, and drawing conclusions from the results while comparing results, suggest further possible experimentation and apply the conclusions to future experiments and concepts

B-1 Concepts of Physical Science

SB Students develop an understanding of the concept, models, theories, universal principles, and fact that explain the physical world

SB 1 Students development and understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior

SB 2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system or system to another, may be unavailable for use, and is ultimately conserved

SB 3 Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems

SB 4 Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects

Grade Level Expectations

The student demonstrates an understanding by:

[11] SB1.1 predicting the properties of an element using the periodic table and verifying the predictions through experimentation

[11] SB2.1 demonstrating energy transfers and transformations by comparing useful energy to total energy (entropy)

[11] SB3.1 predicting how an atom can interact with other atoms based on its electrons configurations and verifying the results

KGBSD Student Objectives

[11] SB1.1 Students answer questions through class exercises and evaluation tools using the periodic table to describe atoms in terms of their base components

[11] SB2.1 Student learns the relation between energy transfer, transformations and compare the useful energy to total energy

[11] SB3.1 Students demonstrate knowledge of behavior of electrons in chemical bonding and can describe how atoms interact with others based on electron configurations and verifying the result

[11] SB3.2 Students demonstrate knowledge that radioactivity is a result of the decay of unstable nuclei