

Differentiated/AP Chemistry Curriculum

BIG IDEA 1: The chemical elements are fundamental building materials of matter, and all matter can be understood in terms of arrangements of atoms. These atoms retain their identity in chemical reactions

PS-1 MATTER, MEASUREMENTS, INQUIRY & TECHNOLOGY – Qualitatively and quantitatively describe matter

TS-1.1 Scientific method & inquiry- The process of science is investigation, which can be defined as a set of practices that allows for identifying and controlling variables

- 1.1.1 Distinguish between qualitative & quantitative observations and interpretations.
- 1.1.2 Formulate a testable hypothesis based on observations, interpretations, prior evidence, and/or scientific models.
- 1.1.3 Design and conduct a controlled experiment that tests a hypothesis which outlines the independent (experimental), dependent & controlled variables
- 1.1.4 Determine procedures & equipment used to safely conduct controlled experiments.
- 1.1.5 Determine appropriate data collection procedures for a controlled experiment–
- 1.1.6 Process data which best shows the relationship between the independent vs. dependent variables from a controlled experiment.
- 1.1.7 Formulate conclusions of a controlled experiment based on analyzing and interpreting data
- 1.1.8 Evaluate the design of a controlled experiment by identifying sources of error.
- 1.1.9 Discuss how accepted scientific hypotheses can become scientific theories and/or laws
- 1.1.10 Discuss the role of scientific research in society & how it contributes to knowledge

TS-1.2 Classification & Properties of Matter - Matter can be classified as different forms by physical and chemical properties/changes

- 1.2.1 Explain how physical & chemical properties are used to describe and/or differentiate the forms of matter
Key Ideas: intensive & extensive physical properties, signs of a chemical change
- 1.2.2 Explain how specific signs can be used as indicators of physical or chemical changes.
- 1.2.3 Use a model to distinguish between mixtures, compounds & elements based on physical & chemical properties.
Key Ideas: diatomic elements
- 1.2.4 Differentiate homogeneous and heterogeneous mixtures based on composition
- 1.2.5 Differentiate the two pure substances (compounds and elements) based on chemical changes

TS-1.3 Scientific measurements, Conversions & Dimensional Analysis- Science communicates the understanding of the physical world through mathematical models.

- 1.3.1 Differentiate between the accuracy and precision of scientific measurements
- 1.3.2 Explain how significant figures are used to represent the level of accuracy of a scientific measurement
- 1.3.3 Solve mathematical calculations using appropriate significant figures as part of the answer
- 1.3.4 Represent scientific measures in scientific notation
- 1.3.5 Identify the SI units of measure
Key Ideas: mole & molar mass
- 1.3.6 Use metric system prefixes to represent the magnitudes of a measure
- 1.3.7 Represent measures in various units by using measure conversions
- 1.3.8 Solve mathematical problems using dimensional analysis
- 1.3.9 Assess outcomes by calculating percent errors