

AP Chemistry Big Ideas

Adapted from: AP Chemistry ■ Course Planning and Pacing Guide 2 © 2012 The College Board.

Big Idea 1: States of Matter- 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.

Including: Periodicity, Spectroscopy, Stoichiometry

Big Idea 2: Properties of Matter-forces of attractions, characteristics, and states – Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them.

Including: Classification of substances, molecules, solutions, phases of matter

Big Idea 3: Chemical Reactions - Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons.

Including: Physical and Chemical Processes, Electrochemistry, Chemical Reactions

Big Idea 4: Kinetics -Rates of chemical reactions are determined by details of the molecular collisions.

Including: Mechanism, Observations (measurements), Rate and Collision Theory

Big Idea 5: Thermodynamics - The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter.

Including: Nature of heat transfer, nature of chemical energy, free energy, work, and calorimetry

Big Idea 6: Equilibrium -Any bond or intermolecular attraction that can be formed can be broken. These two processes are in a dynamic competition, sensitive to initial conditions and external perturbations.

Including: Equilibrium, thermodynamics, acids, bases, solubility