

SCIENCE CURRICULUM SUMMARY

The purpose of the Science curriculum Summary is to present an overview of the AP Chemistry curriculum. Parents are the intended audience of the Science Curriculum.

Atomic Theory

- Evidence for the atomic theory
- Atomic masses
- Atomic number and mass number; isotopes
- Electron energy levels, atomic spectra, quantum numbers, atomic orbitals
- Periodic relationships
- Nuclear chemistry

Bonding

- Binding forces
- Molecular models

States of Matter

- Gases
- Liquids and solids

Reactions

- Reaction types
- Stoichiometry

Kinetics

- Determination of rate law
- Factors of effecting rate
- Integrated rate laws
- Collision theory
- Reaction mechanisms

Thermodynamics

- State functions
- 1st Law
- Enthalpy, Entropy and spontaneous processes
- Free energy
- 2nd Law
- Free energy changes' relationship to K_{eq} and non-standard states

Electrochemistry

- Galvanic cells and cell potentials
- Cell potential, electric work, and free energy
- Nernst equation
- Cell potential v. k_{eq}

Equilibrium

- Equilibrium constants
- Le Chatelier's principle
- Quantitative treatment
- pK, pH, K_{sp}, K_a, K_b

- Instrumental techniques
- Gravimetric analysis
- Flame tests
- pH analysis
- Titration

PROCESS SKILLS

- Measurement
- Problem solving - equations
- units conversion
- Volumetric analysis
- Observational skills
- Data collection

Organic Chemistry

- Naming system
- Functional groups
- Simple organic reactions