

Pine Ridge high School

Course Syllabus

NAME OF COURSE: AP Chemistry

GRADE(S): 10-12

LENGTH OF COURSE: full year

COURSE DESCRIPTION:

AP Chemistry is designed to be the equivalent of a first year college general chemistry course. The class meets 5 block periods per week.

The course will place special emphasis on applying mathematics to problem solving and as a means of expressing and modeling scientific inquiry. The course will provide an in depth treatment of atomic structure, gas laws, thermodynamics, stoichiometry, kinetics, equilibria, oxidation-reduction and electrochemistry.

COURSE OBJECTIVES: Develop students' problem solving skills. Provide laboratory experience that enables students to analyze collected data and arrive at logical conclusions. Give students background necessary to score well on the AP exam. Prepare students for additional courses in science. Develop students' ability for independent and logical thought Increase students' ability to apply math to physical sciences

TEXTBOOK:

Author: Brown, Theodore Second Author: Eugene, LeMay

Title: Chemistry the Central Science

Publisher: Prentice Hall

Chapters: 1-16, 19 - 23, 25 (All but 17, 18, 24)

Websites

URL:<http://apcentral.collegeboard.com/apc>

Description: The College Board AP Chemistry site

URL:<http://www.sciencegeek.net/APChemistry>

Description: chapter by chapter overview of all the topics in the AP Chemistry curriculum, includes notes, worksheets, and interactive practice problems.

EVALUATION AND ASSESSMENT: Description and method of evaluation for each unit noted below.

- Tests and Quizzes: 70%
- Homework, Class Participation, Laboratory and Projects: 30%
- Subject to change if required

Course Overview

The AP Chemistry course provides students with a college-level foundation to support future advanced course work in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.

LABORATORY REQUIREMENT

This course requires that instructional time engages students in lab investigations. This includes a minimum of 16 hands-on labs (at least six of which are inquiry based), and it is recommended that students keep a lab notebook throughout.

AP Chemistry Course Content

The key concepts and related content that define the AP Chemistry course and exam are organized around underlying principles called the Big Ideas. They encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the particulate nature of matter underlying the observations students make about the physical world. The following are **Big Ideas**:

- The chemical elements are the building blocks of matter, which can be understood in terms of the arrangements of atoms.
- 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.
- Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons.
- Rates of chemical reactions are determined by details of the molecular collisions.
- The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter.
- Bonds or attractions that can be formed can be broken. These two processes are in constant competition, sensitive to initial conditions and external forces or changes.

SCIENCES PRACTICES

Students establish lines of evidence and use them to develop and refine testable explanations and predictions of natural phenomena. Focusing on these disciplinary practices enables teachers to use the principles of scientific inquiry to promote a more engaging and rigorous experience for AP Chemistry students. Such practices require that students:

- Use representations and models to communicate scientific phenomena and solve scientific problems;
- Use mathematics appropriately;
- Engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course;
- Plan and implement data collection strategies in relation to a particular scientific question;
- Perform data analysis and evaluation of evidence;
- Work with scientific explanations and theories; and
- Connect and relate knowledge across various scales, concepts, and representations in and across domains.