



2023-2024 COURSE SYLLABUS

AP Chemistry

GENERAL INFORMATION:

Instructor name: Andrea Horgan

Room Number: B26

Phone number: 916-433-5200 ext. 506126

Email Address: andrea-horgan@scusd.edu

Remind code: @jfkapchem

Remind is not a requirement, HOWEVER, information will be sent out through Remind on a regular basis. Mrs. Horgan will be available to answer any questions until 8pm every night.

Tutoring Hours: Before school (7:45am -8:15 am)

After school tutoring hours are available if arranged in advance.

Textbook: Chemistry: A Molecular Approach, 5th edition

By Nivaldo Tro

Online registration will take place the first week of school.

**In addition to the textbook, an A.P. Chemistry review book is highly recommended.

COURSE DESCRIPTION:

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

College Course Equivalent

The AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year.



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Prerequisites

The following prerequisites are suggested, but not required. Students should have successfully completed Biology or Molecular Biology with a B or better. Students should also have successfully completed Math 1 with a B or better. Chemistry includes a significant amount of math. Students should be comfortable with basic algebra.

Lab Requirement

This course requires that 25 percent of instructional time engages students in lab investigations. This includes a minimum of 16 hands-on labs (at least six of which are inquiry-based).

AP TEST:

All students will be required to take the AP Chemistry test on Monday, May 6, 2024. The testing fees will be paid for by the district.

GRADING:

The grading scale is as follows:

Grade Percent

A 89.5-100%

B 79.5-89.4%

C 69.5-79.4%

D 59.5-69.4%

F Below 59.4%

The grades will be divided as:

70% - Tests

20% - Labs (including lab reports and lab quizzes) and Homework

10% - Quizzes

MAKEUP WORK:

Makeup work will be given if the absence is excused. Students have as many days to make up the work as when they were absent. For example, if a student was absent for 3 days, he/she has 3 days to make up for the missed work.



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LATE WORK:

Any late work that is turned in after the due date (that does not qualify as makeup work) will be deducted points.

CELL PHONE POLICY:

Cell phones will not be allowed during class time. Cell phones that are out during class time will be confiscated and locked in a drawer. Students may retrieve their cell phone after class. On the third confiscation, the cell phone will be sent to the office and the student will be put on a cell phone contract with the administration.

If a cell phone is out at ANY time during a test FOR ANY REASON, the student will receive a zero on the test WITHOUT A WARNING.

DAILY AGENDA:

Daily lesson/lab: Lessons and labs will be based on the unit of study and will include lecture, group work, independent study and group labs.

CLASS RULES AND EXPECTATIONS:

1. Do only those things which allow you and others to learn.
2. Bring materials necessary for learning.
 - a. Notebook and pen/pencil
 - b. Current packets
3. No food or drinks
 - a. Because of the nature of the course and exposure of chemicals, food and drinks will not be allowed. Students may bring a water bottle.
4. Respect teacher and classmates.
5. Arrive on time.
6. ALL LABORATORY SAFETY RULES AND PROCEDURES MUST BE FOLLOWED.
 - a. A separate list of lab rules and procedures will be handed out to each student.



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GENERAL COURSE OUTLINE *numbers indicate approximate number of lessons

Unit 00 : General Science and Math Review (1 week)

Unit 1: Atomic Structure and Properties (3 weeks)

Moles and molar mass(1)

Mass spectroscopy of elements(1)

Pure substances and mixtures (2)

Electron Configuration(1)

Photoelectron Spectroscopy(1)

Periodic Trends(1)

Valence Electrons and Ionic Bonding(1)

Unit 2: Molecular and Ionic Structure and Properties (2 weeks)

Chemical Bonds (3)

Intramolecular Forces and Potential Energy (1)

Lewis Diagrams (1)

Resonance and Formal Charge (1)

VSEPR and Hybridization (1)

Unit 3: Intermolecular Forces (4 weeks)

Intermolecular Forces(1)

Properties of Solids(1)

Solids, Liquids and Gases(1)

Ideal Gas Law(1)

Kinetic Molecular Theory(1)

Deviation from the Ideal Gas Law(1)

Solutions and Mixtures (2)

Solubility and Separation (2)

Photoelectric Effect (1)

Spectroscopy (2)



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Unit 4 : Chemical Reactions (2 weeks)

Reactions (2)

Stoichiometry (1)

Types of Chemical Reactions (1)

Intro to Acids and Bases (1)

Redox Reactions (2)

Unit 5: Kinetics (3 weeks)

Rates and rate law (2)

Concentration over time (1)

Reaction mechanism (4)

Collision and energy (3)

Catalysis(1)

Unit 6: Thermodynamics (3 weeks)

Thermodynamic basics (3)

Calorimetry (2)

Energy and phase change (1)

Bond enthalpies (1)

Enthalpy of formation (1)

Hess's law (1)

Unit 7: Equilibrium (4 weeks)

Intro to Equilibrium (1)

Direction of Reversible reactions (1)

Reaction Quotient (1)

Equilibrium Constant (1)

Calculating the Equilibrium Constant (1)

Magnitude of the Equilibrium Constant (1)

Properties of the Equilibrium Constant (1)

Equilibrium concentrations (1)

Representations of Equilibrium (1)

Introduction to Le Chatelier's principle (1)

Reaction quotient and Le Chatelier's principle (2)



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Introduction to Solubility Equilibria (1)

Common-ion effect (1)

pH and solubility (1)

Unit 8: Acids and Bases (3 weeks)

Introduction to acids and bases (1)

pH and pOH of strong acids and bases (1)

Weak acid and base equilibria (1)

Acid Base Reactions (1)

Structure of Acids and Bases (1)

pH and pK_a (1)

Properties of Buffers (1)

Henderson-Hasselbach Equation (1)

Buffer capacity (1)

Unit 9: Application of Thermodynamics (3 weeks)

Entropy (2)

Free energy (3)

Free energy and Equilibrium (2)

Galvanic and Electrolytic Cells (2)

Cell potential under nonstandard conditions (1)

Electrolysis and Faraday's law (1)

Unit 10: Review (3 weeks)

90 Total lessons

31 Weeks

AP Test: May 6, 2024

To receive credit for reading this syllabus, send an email to me with a picture of your favorite animal FROM YOUR STUDENT EMAIL. Please introduce yourself and tell me anything that you want me to know.