

AP Chemistry

Textbook: Chemistry: A Molecular Approach 4th ed. Nivaldo Tro.

Course:

Chemistry 130 is a study of fundamental chemistry principles, including atomic structure, chemical bonding, kinetic theory, chemical kinetics, thermodynamics, solutions, electrochemistry, nuclear chemistry and equilibrium. Recommended for pre-professional, engineering and related science and medicine majors. I hope to create a similar college classroom experience to prepare the students for the next steps they will take in college. Students will learn through teacher lead discussions as well as laboratory inquiry experiences throughout the year. The course is structured around the enduring understandings within the six big ideas described in the AP Chemistry Curriculum Framework.

Attendance:

The students are expected to be a class on time ready to learn everyday. As a part of this course there will be a one day per week zero hour lab section starting at 7:00 am. Students are expected to be on time and if there is a prelab exercise it is due upon arrival. If it is not completed the student will not be able to participate in the laboratory activity.

Grading:

The grades will be weighted in this class.

- Homework/Quizzes 15%
- Exams (~ 3 exams/9 weeks) 55%
- Labs 30% (25% of the instructional time will be devoted to laboratory experience)

Students will be performing labs and lab reports in line with expectations of an introductory college level chemistry course and allow students to apply the seven science practices of the AP Framework. They will focus on developing good laboratory technique as well as an inquiry and guided inquiry approach to performing in lab. Students will also gain exposure to the use of technology in the laboratory through the use of Vernier probes and software LoggerPro.

Some labs will be completed on the forms provided, and others will require a formal lab report. The expectations for each lab will be discussed in the prelaboratory discussion.

Laboratory Work

In addition to other laboratory activities, the following labs will be completed first semester as part of the Chem 130 dual credit course. These labs can all be found in the lab manual posted on Schoology.

- Measurement techniques and the determination of density
- Physical and chemical changes
- Law of definite proportions and types of chemical reactions
- Chemical stoichiometry: The determination of Vitamin C
- The Gas Laws: Boyle's Law and Charles Law
- Evaluation of the Gas Law constant
- The molecular mass of a condensable vapor
- Hess' Law: Calorimetry
- Identification of common chemicals
- Beer's Law: Colorimetry of Copper (II) solutions
- Molecular Structure
- Valence Bond Theory: Hybridization
- Separation of mixtures by paper chromatography
- Molecular mass determination by boiling point elevation

Order of Topics

We will mostly follow the order of topics outlined in the AP chemistry course and exam description which you can find linked in schoology. The two big exceptions are that we will cover unit 6 first semester and unit 5 second semester in order to stay on track for the Chem 130 dual credit course and we will divide unit 3 into two parts: solutions and gases

First semester:

- Unit 1 - Atomic Structure and Properties
- Unit 2 - Molecular and Ionic Compound structure and properties
- Unit 3 - Intermolecular Forces and Properties
 - Part 1: (3.1-3.6) Gas Laws
 - Part 2: (3.7-3.13) Solutions
- Unit 4 - Chemical Reactions
- Unit 6 - Thermodynamics

Second Semester:

- Unit 5 - Kinetics
- Unit 7 - Equilibrium
- Unit 8 - Acids and Bases
- Unit 9 - Applications of Thermodynamics
 - Part 1: (9.1-9.6) Thermodynamics
 - Part 2: (9.7-9.10) Electrochemistry