

Course Title: Conceptual Chemistry

Course Description:

Conceptual chemistry explains the fundamentals of chemistry but also requires students to consider related societal issues. By understanding atoms, molecules, the properties and structures of matter, as well as chemical and energy changes, students develop a foundation for better analysis of issues such as malnutrition, substance abuse, genetic engineering, the environment and energy supplies and depletion. The application of chemistry principles to today's concerns fuels the students' exploration of this subject.

Learning Objectives:

By the end of this course, students will be able to:

1. describe how chemists study the world
2. discuss the names, symbols, and properties of representative elements
3. explain the structure of the atom
4. use the periodic table
5. describe how matter is identified and classified
6. explain the differences among atoms, molecules, mixtures, and solutions
7. distinguish between physical and chemical properties
8. explain what happens during a chemical reaction
9. write and balance chemical equations
10. compare and contrast states of matter
11. describe the different types of bonds atoms form
12. name ionic and covalent compounds
13. interpret information about chemistry presented in graph or chart format
14. conduct virtual and real chemistry experiments
15. research and present information on applications of chemistry

Resources and Materials:

Online Readings from

- Virtual Chemistry Book
<http://www.chem1.com/acad/webtext/virtualtextbook.html>
- Chemistry Audio Book
http://preparatorychemistry.com/Bishop_Audio_Book.htm
- Vision Learning—Chemistry
<http://www.visionlearning.com/library/index.php>
- Essential Study Partner—Chemistry
<http://www.mhhe.com/physsci/chemistry/chang7/esp/default.htm>
- Science News for Kids

<http://www.sciencenewsforkids.org/>

- General Chemistry Glossary
<http://antoine.frostburg.edu/chem/senese/101/glossary.shtml>
- Online Lab and Tutorial sites

Student Evaluation and Grading Policies for Enrichment Courses:

Since this is an enrichment class, a narrative evaluation will be written at the conclusion of the course. Students will be evaluated on the quality of their work, participation in activities and discussions, and performance on labs and projects. Points are used to assess mastery of the course content and skills, but NOT to award a final grade. Students will also be evaluated on timely submission of assignments and ability to work and learn independently.

Instructor Biography:

Mrs. Nuño currently teaches AP Biology, Chemistry, Honors Chemistry, and Conceptual Physics in an independent school in western Massachusetts. She has a B.S. in environmental health from UCLA, an M. A. in biological science from UC Santa Barbara, a certificate in online education from UCLA, and extensive course work in science education. Prior to moving to the east coast, she taught AP Biology, chemistry, and conceptual physics in a private school in Los Angeles. She now lives on a tree farm in southern Vermont!

Contact Information:

Email: xxx@xxx.xxx

Cyber Office Hours (East Coast Time)

Daily: 5:00—6:00 am

Wednesday: 6:00—7:00 pm

Thursday: 7:00—8:00 pm

Conceptual Chemistry Timeline:

Dates	Topics	Activities	Labs
Jan 15-22	Orientation to Online Learning		
Jan 23-29	What is Chemistry?	Household Chemicals Sense of Scale What Chemists Do	Different Way of Measuring Bubbles Candles
Jan 30 – Feb 5	Elements All Around	Element Naming Metals & Nonmetals Periodic Table Puzzle	Pyrotechnics Visual Elements Heavy Metal Pollutants
Feb 6 – Feb 12	Structure of Atoms	Atom Builder Element Math Isotopes	Atomic Models Elements Radioactive Decay

Dates	Topics	Activities	Labs
Feb 13 – Feb 19	Elements & Compounds	Chemical Bonding Ionic Concentration Molecular Shapes	Chemical Bonds Chemical Formulas Molar Mass Phytochemicals
Feb 20 – Feb 26	Gas, Liquid or Solid?	Absolute Zero States of Matter Chocolate Chemistry	Gas Laws Gas Law inquiry Phase Diagrams Density of Hershey Kisses
Feb 27 – Mar 4	Chemical Changes	Chemical Reactions Fire and Fireworks	Alka-Seltzer Reactions Acids and Bases Chemical Reactions of Metals
Mar 5 – Mar 19	Student Presentations	Comment of Student Presentations	Report on Chemist or Chemistry Topic
Final Evaluations			