



## Course Description

This course introduces chemical concepts for understanding life and the environment. Topics include atomic structure, the periodic table of elements, molecules and chemical bonding, chemical formulas and reactions, stoichiometry, gases, liquids, solutions, and organic chemistry. Non-science students will also find this course interesting.

### Intended Learning Outcomes:

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

- Utilize the specialized vocabulary and nomenclature of chemistry.
- Use metric and SI units in performing chemical calculations.
- Describe the experimental discovery of subatomic particles, summarize the characteristics of electrons, protons and neutrons, and identify their roles as components of atoms.
- Communicate an understanding of atomic structure, the differences between elements, and the role of the periodic table in organizing elements within a coherent theoretical and empirical system.
- Describe and account for the periodic table trends concerning atomic number, atomic radius, ionization energy and electronegativity.
- Demonstrate an ability to name chemical compounds, and identify and construct chemical formulas.
- Compare the formation and characteristics of ionic and molecular compounds.
- Demonstrate an ability to perform mathematical calculations involving chemical formulas, molecular weights, moles, Avogadro's number and molarity.
- Balance chemical equations, demonstrate an understanding of the information they provide chemists and solve stoichiometry problems.
- Identify and account for the general characteristics of the gas state and solve mathematical problems involving Boyle's Law, Charles' Law, Gay-Lussac's Law and Avogadro's Law.

<u>WEEK</u>	<u>DATES</u>	<u>COURSE MATERIAL</u>
1	Sep. 09	Unit 1. Introduction; Measurement and Calculation
2	Sep. 13/16	Unit 2. Introductory Terminology; Unit 3. Chemical Formulas and Names.
3	Sep. 20/23 <b>Sep. 23</b>	Unit 3, continued. Chemical Formulas and Names <b>Quiz No. 1 (Units 1 and 2)</b>
4	Sep. 27/30	Unit 4. Calculations Based on Formulas.
5	Oct. 04/07 <b>Oct. 07</b>	Unit 5. Stoichiometry <b>Quiz No. 2 (Units 3 and 4)</b>
6	Oct. 14	Unit 5, continued. Stoichiometry.
7	Oct. 18/21 <b>Oct. 21</b>	Unit 6. Periodic Table and Electron Distributions. <b>Quiz No. 3 (Unit 5 only.)</b>
8	Oct. 25/28 <b>Oct. 28</b>	Unit 6, cont. Periodic Table and Electron Distributions.+ start Unit 7, Chemical Bonding <b>Mid-term exam (Units 1-5, inclusive).</b>
9	Nov. 01/04	Unit 7. Chemical Bonding
10	Nov. 08 <b>Nov. 09</b>	Unit 8. Gases <b>Last day for withdrawal.</b>
11	Nov. 15/18 <b>Nov. 18</b>	Unit 8, continued. Gases. <b>Quiz No. 4 (Units 6 and 7).</b>
12	Nov. 22/25	Unit 9. Liquids and Solutions.
13	Nov. 29/Dec. 02 <b>Dec. 02</b>	Unit 9, continued. Liquids and Solutions. <b>Quiz #5. (Units 8 and 9).</b>
14	Dec. 06/09	Unit 10. Organic Chemistry. Review.
15/16	Dec. 13-21	Final exam period (Units 1-10). Date to be announced.

**Quizzes** will be given on Wednesdays from 6:30 - 7:20. The **midterm exam** will be given on Wednesday, October 25. A lab will follow the exam. The final exam date will be posted in November and will be scheduled for a three hour period.

## Laboratory Outline

Although an outline of laboratory experiments is presented in the *Chemistry 060 Laboratory Manual*, 1999 Edition, all experiments described in the lab manual will not be conducted due to time constraints. A schedule of experiments to be conducted in a given week is provided below.

Laboratory reports are due in the following experimental lab period. The lab manual has been revised to allow students to hand in the completed pages taken directly from the lab manual. Each lab partner must hand in a separate report even if each person shared equally in the work. There will not necessarily be a report required for each laboratory session. On some occasions a formal laboratory report will be required. Instruction in the preparation of formal reports will be provided.

The class will be split approximately in half, with each section of the class attending the laboratory experiments on alternate weeks. Everyone attends the Midterm Exam in the same period unless justification for absence is presented in writing.

### Laboratory Schedule

Thursday, September 9<sup>th</sup> - Groups A and B  
*Orientation to the Laboratory & Laboratory Safety*

Thursday, September 16<sup>th</sup>            Group A  
Thursday, September 23<sup>rd</sup>.        Group B  
*Experiment #1 – Density*

Thursday, September 30<sup>th</sup>            Group A  
Thursday, October 7<sup>th</sup>.            Group B  
*Experiment #4. Heat of Combustion & Begin Experiment 5 – Recycling Copper, Part 1*

Thursday, October 14<sup>th</sup>            Group A  
Thursday, October 21<sup>st</sup>            Group B  
*Experiment #5 - Recycling Copper, Parts 2 - 6*

**Thursday, October 28<sup>th</sup>            Midterm Exam. [no lab this week]**

Thursday, November 4<sup>th</sup>            Group A  
Thursday, November 18<sup>th</sup>.        Group B  
*Experiment #5 - Recycling Copper, completion of Part 6*  
*Experiment #9 - Chemical Reactivity*

Thursday, November 25<sup>th</sup>            Group A  
Thursday, December 2<sup>nd</sup>.        Group B  
*Experiment 15 – Accuracy & Precision of Experimental Results*

Thursday, December 9<sup>th</sup>.  
*No experiment. Review of course material in preparation for final exam.*