Chemistry 201
Spring 2014

Instructor
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Office Number: 773-967-4777
Time: 6:00pm - 9:40pm T/TH
Office Hours: 5:15 - 5:45 T/TH

Required Texts & Supplies

- *Chemistry: A Molecular Approach 3rd Ed.*
  by Nivaldo J. Tro
- Laboratory Notebook (Must be bound)
- Calculator

Learning Outcomes

At the completion of this course, the successful student should be able to:

- Solve quantitative chemistry problems and demonstrate reasoning clearly and completely. Integrate multiple ideas in the problem solving process.
- Describe, explain and model chemical and physical processes at the molecular level in order to explain macroscopic properties.
- Classify matter by its state and bonding behavior using the Periodic Table as a reference.
- Apply important theories such as the Kinetic Molecular Theory of Gases or the Quantum Mechanical Theory of the Atom to the solution of general chemistry problems.
- Perform general chemistry laboratory experiments using standard chemistry glassware and equipment and demonstrate appropriate safety procedures.
- Record, graph, chart and interpret data obtained from experimentation and use that information to correctly identify/analyze assigned unknown substances.

Student Responsibilities

1. Class attendance is mandatory
2. Students are required to participate in all in-class activities
3. Late work policies: All assignments should be turned in on the due dates

Overall Evaluation

Category	%
Class Participation	5
Homework	5
Quizzes	10
Exam I	10
Exam II	15
Exam III	15
Laboratories	15
Final Exam	25
Total	**100**

Grade Assignment

Score (%)	Grade
≥ 90	A
80 – 89	B
70 – 79	C
60 – 69	D
< 60	F

Study Hints

The way in which you study is more important than the total number of hours you study. Please consider the following hints:

- The problems are applications of the principles you will study in the course. Study the principles, and review the reading and your class notes, before attempting the problems. Base your problem solutions on knowledge of the principles.
- Study chemistry a little each day. By studying the book and working a few problems each day you will find that the lectures make more sense, you will be prepared to ask questions about areas that give you trouble, and you will be better prepared for the exams.
- Take the homework exams seriously. It is through working out these problems that you will master the concepts. Working with other students on the homework can be helpful. Even explaining something you already understand to a friend will deepen your understanding. However, make sure that the work you turn in is your own write-up.

Schedule of Lectures, Exams, Labs

Week	Date (Day)	Topic	Text Reference
1	01/14 (T)	**LECTURE:** Introduction, Basic Chemistry Review	
	01/16 (Th)	**LECTURE:** What is Matter?	Chapter 1
		LAB: Check-In, Lab Safety, Mystery White Powder	Handout
2	01/21 (T)	**LECTURE:** The structure of the Atom	Chapter 2
	01/23 (Th)	**Quiz I: Basic Chemical Concepts**	Chapter 1 & 2
		LECTURE: Molecules, Compounds, and Chemical Equations	Chapter 3
		LAB: Simple Qualitative Analysis	Handout
3	01/28 (T)	**CLASS CANCELED: TOO COLD**	
	01/30 (Th)	**LECTURE:** Chemical Reactions	Chapter 4
4	02/04 (T)	**LECTURE:** Problem Solving	Chapter 4
	02/06 (Th)	**Quiz II: Chemical Reactions & Stoichiometry**	Chapter 3 & 4
		LECTURE: Acid-Base & Redox Reactions	Chapter 3 & 4
		LAB: Single & Double displacement Reactions	Handout
5	02/11 (T)	**LECTURE:** Reactions in Aqueous Solutions (Solutions, Precipitation, Acid-Base, Redox, Stoichiometry, Titrations)	Chapter 4
	02/13 (Th)	**LECTURE:** Reactions in Aqueous Solutions (Focus on Redox)	Chapter 4
		LAB: Some Nonmetals and their compounds - Preparation and Properties	Handout
6	02/18 (T)	**QUIZ III: Solutions**	
		Review for Exam I	
		LAB: Determination of Unknown Solutions	
	02/20 (Th)	**EXAM I: Chapters 1-4**	
		LAB: Alkaline Earths and the Halogens	Handout
7	02/25 (T)	**LECTURE:** Introduction to Gas behavior (Gas pressure, simple gas laws, ideal gas laws)	Chapter 5
	02/27 (Th)	**LECTURE:** Properties of Gases (Gas stoichiometry, Gas mixtures, kinetic-molecular theory of gases)	Chapter 5
		LAB: Molar Mass of a Volatile compound	Handout

Week	Date (Day)	Topic	Text Reference
8	03/04 (T)	**QUIZ IV: Ideal Gas Law**	Chapter 5
		LECTURE: Gas Effusion, Non-Ideal Gases, Partial Pressure	Chapter 5
	03/06 (Th)	**LECTURE:** Thermochemistry (Heat, Calorimetry)	Chapter 6
		LAB: Introduction to Thermodynamics in the Laboratory	
9	03/11 (T)	**LECTURE:** Thermochemistry (Hess's Law, Standard Enthalpies of Formation, Fuels)	Chapter 6
	03/13 (Th)	**Quiz V: Thermochemistry**	Chapter 6
		LECTURE: Thermodynamics	Chapter 6
10	03/18 (T)	**LECTURE:** Introduction to Quantum Chemistry	Chapter 7
	03/20 (Th)	**LECTURE:** Quantum Theory: Three Experiments, Quantum Numbers	Chapter 7
11	03/25 (T)	**QUIZ VI: Quantum Chemistry**	
		LECTURE: Periodic Properties	Chapter 8
	03/27 (Th)	**Exam II: Chapters 5-8**	
		LECTURE: Chemical Bonding	Chapter 9 & 10
12	04/01 (T)	**LECTURE:** Bond Energies	Chapter 11
	04/03 (Th)	**QUIZ VII: Molecular Bonding**	
		LECTURE: Intermolecular Forces	Chapter 11
13	04/08 (T)	**LECTURE:** Intermolecular Forces: Phase Diagrams	Chapter 11
	04/10 (Th)	**LECTURE:** Crystalline solids	Chapter 11
14	04/15 (T)	**NO CLASS: SPRING BREAK**	
	04/17 (Th)	**NO CLASS: SPRING BREAK**	
15	04/22 (T)	**LECTURE:** Intro to Physical Properties of Solutions	Chapter 12
		REVIEW for Exam III	
	04/24 (Th)	**Exam III: Chapter 9-11**	
		LECTURE: Solutions and their physical properties	Chapter 12
16	04/29 (T)	**LECTURE:** Solutions and Their Physical Properties	Chapter 12
	05/01 (Th)	**REVIEW for Comprehensive Final Exam**	
17	05/06 (T)	**Comprehensive Final Examinations**	
	05/08 (Th)	Final Class: Student Conference, Discussion of Final Grades	