

Chemistry 201

Spring 2012

Lecturer:

Dr. Greg Kalyuzhny

GMCS 213C; 619-594-1596

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Office hours: **Mon, Wed 4-6 pm**
and by appointment

WEBSITE: www-rohan.sdsu.edu/~chem201

Lab Coordinator:

Dr. Diane Smith

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Office Hours:

Text and other required materials: Silberberg, "Chemistry", 5th edition; Chem 201 Lab Manual; Lab Notebook, approved lab apron (*will be available for purchase in lab), safety glasses or goggles, Casio Model FX-300MS plus calculator (~\$12, available in the bookstore. All students will be required to use this particular calculator for quizzes and exams.)

Grading. Letter grades will be assigned based on the percentage of total possible points using the following scale:

A: 100-88%; A-: 88-85%

B+: 85-83%; B: 83-78%; B-: 78-75%

C+: 75-73%; C: 73-60%; C-: 60-58%

D: 58-50%

F: <50%

Points

3 midterm exams, multiple choice, 100 pt ea.	300
Final, multiple choice, comprehensive	200
Quizzes, best 8 out of 9, 20 pt ea.	160
4 Worksheets, 10 ea.	40
Ion Naming Test, required to pass course	0
7 Lab Reports	175
2 Group Unknowns, 20 ea.	40
General Unknown Report	70
Lab Performance and Notebook	<u>15</u>
	1000 pts

Quizzes will be given in the Recitation sections. They will be based on lecture material from the previous week. A homework assignment will be given in lecture (but not collected) to help prepare you for each quiz. The Midterm exams will consist of 20 multiple choice questions. They will be given on Fridays at the regularly scheduled lecture time in various locations depending on lab section. The Final exam will consist of 40 multiple choice questions based primarily on questions from the 3 midterm exams (some of the questions will be more complex). There will be a few questions based on material covered in lecture after the 3rd midterm exam.

Getting Help. Starting the third week of the semester, TA's will be available in the Chem 201 Help Room (GMCS 213a) to answer your questions on homework, labs, etc. The schedule for the Help Room will be posted on the web site and on the door. Also, don't hesitate to come to Dr. Kalyuzhny's office hours with any questions or other concerns you may have regarding the course.

Learning Objectives for Chem 201

The main goal of Chem 201 is to complete the general introduction to Chemistry begun in Chem 200 in order to prepare you for more advanced courses in science.

More specific goals are to

- (1) Make sure you are completely comfortable with basic chemical “arithmetic”, that is, calculations involving molecular weight, grams to moles, moles to grams, molarity, dilutions, reaction stoichiometry, and so on.
- (2) Make sure you are completely comfortable with drawing and looking at Lewis structures of chemical compounds. To start to get you thinking of molecules as 3-D objects and not just a collection of letters and numbers in a molecular formula.
- (3) Make sure you know the names, formulas, charges and structures of the common ions and the common strong acids and bases.
- (4) To learn to identify and understand what is happening in three fundamental types of chemical reactions: (i) acid-base reactions, (ii) ion dissolution and precipitation reactions and (iii) oxidation/reduction reactions.
- (5) To learn that there are two aspects to all chemical reactions - thermodynamics and kinetics, that thermodynamics determines the final result or equilibrium state of a chemical reaction, and that kinetics determines how long it will take to reach the equilibrium state.
- (6) More specifically, with regard to thermodynamics, to learn how we characterize the equilibrium state using the equilibrium constant expression and equilibrium constant (K), how you can use knowledge of K along with other information (starting concentrations and stoichiometry) to calculate the final concentrations in a reaction, and how you can experimentally determine values of K by measuring the final concentrations. You should also learn that ultimately the value of K is determined by the thermodynamic properties (enthalpy, entropy and free energy) of the reactants and products in a chemical reaction and how you can use knowledge of these values to calculate K 's.
- (7) With regard to kinetics, you should learn how we characterize the kinetics or speeds of chemical reactions with the rate law and rate constant (k), how we have to determine both of these quantities by experiment, and what types of experiments can be done to do this. You should also learn that the kinetics are determined by the exact path or mechanism that converts reactants to products, and how knowledge of the rate laws are very useful in determining what are likely mechanisms for a reaction.