Chemistry 4: Dr. Amy Grant Fall 2008

Office Hours: Tu&F 12-1, Th 1-2, and by appointment
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(Check the web page every week)
Prerequisite: Math 70 or equivalent.
(Note: This syllabus may be subject to revision.)
Required Materials: Cracolice, Peters, Introductory Chemistry, 3rd ed.; McLeod, et. al., Chemistry 4 Supplement; Scientific Calculator; Safety Goggles (Instructor Approved).

Grading:		
	Exams (4 x 100 pts)	400
	Quizzes (8 x 25 pts) + 20 pt element quiz	220
	Labs/Exercises (15 x 10 pts) + 30	180
	Comprehensive Final	200
	Total	1000

Final letter grades will be assigned according to the following distribution:
100-88% = A; 87-78% = B; 77-65% = C; 64-54% = D; < 54% = F

Lab: Bring the lab manual and blank report pages. If you forget pages, you may make copies after lab lecture. You must attend the entire lab lecture to do the lab. Late students will receive a penalty or be asked to leave depending on what was missed. Writing something on another student's lab paper, bringing in previously graded Ex.s, or copying a sentence or piece of data is considered cheating. You must do independent work. Keep your lab lecture notes on safety, disposal and important info out during lab. Read the Ex. before coming to lab. Absences result in zeros. Wear appropriate shoes to labs involving burners or chemicals. Don't touch the chemicals!

Assignments: Assignments won't be collected, but you must do problems to do well. It's helpful to rewrite notes and redo class problems on blank paper. Plan to study every day. This class will require far more time than you expect.

Quizzes and Tests: Missed quizzes/exams/labs result in zeros except in certain situations. To discuss a situation, you must contact me or leave a message at least one day before the next class so I can decide the nature of the situation. Generally, appointments are not considered emergencies as they can be rescheduled. You must clear the memory of programmable calculators before quizzes or tests.

Courtesy: Come to class on time and prepared. Questions, comments, and corrections from the class are appreciated. Questions may be answered after class. I do not want to see or hear your cell phone at any time.

Attendance: Students with excessive absences or lateness may receive a lower grade. Students who drop the course before the final W drop date will receive a "W". It is your responsibility to drop the course to avoid an "F". To drop, you must check out of your lab drawer and have a card signed by the stockroom.

Doing Well: Some students need more math before they can pass chem. For others who fail, I've noticed: They zone out in lecture, they don't study often enough or try enough problems, they have many other commitments, and they don't clear up confusion before moving on. Don't wait too long! See me if you have trouble. I want you to succeed!

Week	Date	
1	Tue 8/26	Ch. 2 (Matter)
	Wed 8/27	Ch. 3 (Measurements). Bring your scientific calculator. Bring the math and measurements section of the supplement through week 2.
	Thu 8/28	Ch. 3
	Fri 8/29	**Quiz 1** (Chs. 2-3), Ch. 4 (Gases), safety video (mandatory for all students)
2	Tue 9/2	**Elements Quiz**, Ch. 4
	Wed 9/3	Safety; Check-In; Exp. 1A-G: Burners (L1) Don't forget your goggles, closed shoes, experiment, and Roman-numeral pages.
	Thu 9/4	Ch. 5 (Atomic Theory)
	Fri 9/5	**Quiz 2** (Chs. 4-5), Ch. 6 (Nomenclature)
3	Tue 9/9	Ch. 6

	Wed 9/10	Ex. 2: Measurements (L2)
	Thu 9/11	Ch. 6
	Fri 9/12	Ch. 6
4	Tue 9/16	Nomenclature Exercise (L3+10)
	Wed 9/17	Exp. 7: Charles' Law (L4)
	Thu 9/18	**Test 1** (Chs. 2-6) If you miss a test or quiz, see the syllabus for instructions.
	Fri 9/19	Ch. 7 (Formulas). Bring the reactions section of the supplement through week 6.
5	Tue 9/23	Ch. 7
	Wed 9/24	Ch. 8 (Reactions)
	Thu 9/25	Ch. 8
	Fri 9/26	**Quiz 3** (Chs. 6-8), Ch. 9 (Chemical Change) Bring the NIE section of the supplement
6	Tue 9/30	Ch. 9, Extra credit solubility quiz
	Wed 10/1	Exp. 5: Hydrates (L5)
	Thu 10/2	Ch. 9
	Fri 10/3	**Quiz 4** (Ch. 9), Ch. 9
7	Tue 10/7	Ch. 9, Ch. 10 (Quantity Relationships)
	Wed 10/8	Exp. 11: Conductivity (L6)
	Thu 10/9	Ch. 10
	Fri 10/10	**Test 2** (Chs. 6-9) If you miss a test or quiz, see the syllabus for instructions.
8	Tue 10/14	Ch. 10, Bring Exp. 3 to lecture (Exp. 3 lecture is mandatory for all students)
	Wed 10/15	Exp. 3: Observations (L7+10), save this lab
	Thu 10/16	Ch. 10
	Fri 10/17	Ch. 10, Ch. 11 (Atomic Theory) Bring the quantum section of the supplement
9	Tue 10/21	Ch. 11, Bring Exp. 6 to lecture (Exp. 6 lecture is mandatory for all students)
	Wed 10/22	Exp. 6: Chemical Reactions (L8+10), save this lab
	Thu 10/23	Ch. 11
	Fri 10/24	**Quiz 5** (Chs. 10-11), Ch. 12 (Bonding)

10	Tue 10/28	Ch. 12, Ch. 13 (Drawing Structures)
	Wed 10/29	Ch. 13
	Thu 10/30	Ch. 13
	Fri 10/31	Exercise B: Models (found in the back of your supplement, L9)
11	Tue 11/4	Ch. 14 (Ideal Gas Law), Ch. 15 (Gases, Liquids, Solids)
	Wed 11/5	Exp. 9: Ideal Gas Law (L10)
	Thu 11/6	**Quiz 6** (Chs. 12-13),Ch. 15
	Fri 11/7	Ch. 15
12	Tue 11/11	Ch. 15
	Wed 11/12	Exp. 14: Solutions (L11) "W" drop date is 11/14.
	Thu 11/13	Ch. 16 (Solutions)
	Fri 11/14	**Test 3** (Chs. 10-15) If you miss a test or quiz, see the syllabus for instructions.
13	Tue 11/18	Ch. 16
	Wed 11/19	Exp. 10: Titrations (L12) Note—You must work alone on this lab.
	Thu 11/20	Ch. 17 (Acids and Bases)
	Fri 11/21	**Quiz 7** (Chs. 16-17), Ch. 18 (Equilibrium)
14	Tue 11/25	Ch. 19 (Redox) , Bring Exp. 12 to lecture today (Exp. 12 lecture is mandatory for all students). Bring page redox-5 through week 15.
	Wed 11/26	Ex. 12: Qualitative Analysis (L13). Note—You must work alone on this lab.
15	Tue 12/2	Ch. 19
	Wed 12/3	Ex. 12: Qualitative Analysis (L14). Note—You must work alone on this lab. Lab Check Out.
	Thu 12/4	**Quiz 8** (Chs. 18-19), Ch. 19
	Fri 12/5	Ch. 19
16	Tue 12/9	Ch. 20 (Nuclear Chemistry)
	Wed 12/10	Exercise C: Equations (L15), Open book and notes. Bring your copies of Exps 3 & 6 if you have them. Note—You must work alone on this lab.
	Thu 12/11	**Test 4** (Chs. 16-20)
	Fri 12/12	**Final**

Course Objectives

1. Utilize the language of chemistry including vocabulary, symbols, formulas, and equations.
2. Compare and contrast physical properties, physical changes, chemical properties, and chemical changes.
3. Analyze and solve quantitative problems including stoichiometry, percent yield, energy and change of temperature, gas laws, the ideal gas equation, Dalton's law of partial pressures, percent abundance of isotopes, density, solution concentration, and colligative properties.
4. Compare and contrast ionic and covalent compounds. Evaluate bonding based on the chemical formula, and then correlate compound properties with the structure and types of bonding present.
5. Given one or the other, generate names or formulas for elements, ions, and compounds.
6. Differentiate between five reaction types: combination, decomposition, single replacement, double replacement, and complete oxidation. Given a set of reactants, diagnose the reaction type and predict the products.
7. Solve problems and express answers in scientific and decimal notation with correct units and significant figures. Use logarithms to convert pH, pOH, $[H^+]$, and $[OH^-]$.
8. Correlate spontaneity of oxidation-reduction reactions with standard reduction potentials of reactants.
9. Predict the direction of equilibrium shift in equilibrium processes given a change in concentration, temperature, or volume of substances involved.
10. Create graphs from raw data and evaluate the graphs.
11. Demonstrate basic laboratory skills, including making, recording, and evaluating observations of chemical systems.
12. Evaluate volumetric laboratory glassware for the correct significant place to be read and record volumes correctly. Evaluate quantitative Ex.al data, and infer the presence or absence of specific ions in an unknown mixture.

Track Your Grades:

EQ /20	Q1 /25	Q2 /25	Q3 /25	Q4 /25	Q5 /25	Q6 /25	Q7 /25	Q8 /25	L1 /10	L2 /10	L3 /20	L4 /10	L5 /10	L6 /10

L7 /20	L8 /20	L9 /10	L10 /10	L11 /10	L12 /10	L13 /10	L14 /10	L15 /10	T1 /100	T2 /100	T3 /100	T4 /100	FINAL /200