

**Chemistry 4 (Beginning Chemistry #1176): Dr. Amy Grant      Fall 2009**  
**(10:30-12:30 Tu, Th, F Chem 133;      10:30-1:30 W Chem 162)**

Office Hours: Tu-Th 10-10:30, Th 12:35-1:05, F 1-2, and by appointment  
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(Check the web page every week)

Prerequisite: Math 80 or equivalent. (Note: Students will be notified in advance if this syllabus is revised.)

Required Materials: Cracolice, Peters, Introductory Chemistry, 4th ed.; McLeod, et. al., Chemistry 4 Supplement; Non-Programmable Scientific Calculator; Safety Goggles (Instructor Approved).

<b>Grading:</b>	Exams (4 x 100 pts)	400
	Quizzes (8 x 25 pts) + 20 pt element quiz	220
	Labs/Exercises (15 x 10 pts) + 30	180
	<u>Comprehensive Final</u>	<u>200</u>
	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 entire lab, including blank report pages. If you forget pages, photocopy after lab lecture. You must attend the entire lab lecture to do the lab. Late students will get a penalty or be asked to leave depending on what was missed. Writing on another student's lab, bringing in graded expts, or copying a sentence or piece of data is cheating. Do independent work. View your lab notes on safety, disposal and important info during lab. Read the exp before the lab. Wear appropriate shoes to labs with burners or chemicals. Don't touch the chemicals! If you miss more than 2 labs, you will not pass the course. See Quizzes and Tests for missed lab policy.

**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 leave me a message *at least one day before you return* so I can decide the nature of the situation. Generally, appointments are not considered emergencies as they can be rescheduled. If you forget your calculator, you may use another student's calculator when they finish the exam. You may not use cell-phone calculators, programmable calculators, or translators during a quiz or test.

**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.

**Dropping:** It is your responsibility to drop the course to avoid an "F". To drop, you must check out of your lab drawer.

**Cheating:** I hate to dwell on the negative, but every semester I catch at least one student cheating. Please give some thought as to whether you want to be a trustworthy person of integrity. I hope you'll realize that cheating isn't worth it. Students who are caught cheating will get a zero, will be reported (via written report) to the dean, and will be asked to sit apart from others during tests.

**Doing Well:** Some students need more math to pass. For others who fail, often: They don't try enough problems, they have many other commitments, and they don't resolve confusion before moving on. See me if you have trouble. I want you to succeed!

Week	Date	
1	Tue 8/31	Chapter 2 (Matter), Chapter 3 (Measurements).
	Wed 9/1	Chapter 3. Bring your scientific calculator. Bring the math and measurements section of the supplement through week 2.
	Thu 9/2	Chapter 3
	Fri 9/3	Chapter 4 (Gases), safety video (mandatory for all students)
2	Tue 9/8	<b>Quiz 1 (Chapters 2-3),</b> Lecture: Chapter 4
	Wed 9/9	Safety; Check-In; Experiment 1A-G: Burners (L1) Don't forget your goggles, closed shoes, experiment, and Roman-numeral pages.
	Thu 9/10	<b>Elements Quiz,</b> Lecture: Chapter 5 (Atomic Theory)
	Fri 9/11	Chapter 6 (Nomenclature)

3	Tue 9/15	<b>Quiz 2 (Chapters 4-5),</b> Lecture: Chapter 6
	Wed 9/16	Experiment 2: Measurements (L2)
	Thu 9/17	Chapter 6
	Fri 9/18	Chapter 6
4	Tue 9/22	Nomenclature Exercise (L3+10)
	Wed 9/23	Experiment 7: Charles' Law (L4)
	Thu 9/24	Chapter 7 (Formulas). Bring the reactions section of the supplement through week 5.
	Fri 9/25	<b>Test 1 (Chapters 2-6)</b> If you miss a test or quiz, see the syllabus for instructions.
5	Tue 9/29	Chapter 7, Chapter 8 (Reactions)
	Wed 9/30	Chapter 8
	Thu 10/1	Chapter 8
	Fri 10/2	Chapter 8, Chapter 9 (Chemical Change) Bring the NIE section of the supplement
6	Tue 10/6	Chapter 9
	Wed 10/7	Experiment 5: Hydrates (L5)
	Thu 10/8	<b>Quiz 3 (Chapters 6-8),</b> Lecture: Chapter 9
	Fri 10/9	Chapter 9
7	Tue 10/13	Chapter 9, Chapter 10 (Quantity Relationships)
	Wed 10/14	Experiment 11: Conductivity (L6)
	Thu 10/15	<b>Quiz 4 (Chapter 9),</b> Lecture: Chapter 10
	Fri 10/16	Chapter 10
8	Tue 10/20	Chapter 10, Bring Exp. 3 to lecture (Exp 3 lecture is mandatory for all students)
	Wed 10/21	Experiment 3: Observations (L7+10), save this lab
	Thu 10/22	Chapter 10, Chapter 11 (Atomic Theory) Bring the quantum section of the supplement
	Fri 10/23	<b>Test 2 (Chapters 6-9),</b> If you miss a test or quiz, see the syllabus for instructions.
9	Tue 10/27	Chapter 11, Bring Exp. 6 to lecture (Exp 6 lecture is mandatory for all students)
	Wed 10/28	Experiment 6: Chemical Reactions (L8+10), save this lab
	Thu 10/29	Chapter 11

	Fri 10/30	Lecture: Chapter 12 (Bonding)
10	Tue 11/3	<b>Quiz 5 (Chapters 10-11),</b> Lecture: Chapter 12, Chapter 13 (Drawing Structures)
	Wed 11/4	Chapter 13
	Thu 11/5	Chapter 13, Chapter 14 (Ideal Gas Law)
	Fri 11/6	Exercise B: Models (found in the back of your supplement, L9)
11	Tue 11/10	Chapter 15 (Gases, Liquids, Solids)
	Wed 11/11	Experiment 9: Ideal Gas Law (L10)
	Thu 11/12	<b>Quiz 6 (Chapters 12-13),</b> Lecture: Chapter 15
12	Tue 11/17	Chapter 15
	Wed 11/18	Experiment 14: Solutions (L11)
	Thu 11/19	Chapter 15
	Fri 11/20	<b>Test 3 (Chapters 10-15),</b> If you miss a test or quiz, see the syllabus for instructions. “W” drop date is 11/20.
13	Tue 11/24	Chapter 16 (Solutions)
	Wed 11/25	Chapter 16
14	Tue 12/1	Chapter 17 (Acids and Bases), Chapter 18 (Equilibrium)
	Wed 12/1	Experiment 10: Titrations (L12) Note—You must work alone on this lab.
	Thu 12/3	<b>Quiz 7 (Chapters 16-17),</b> Chapter 19 (Redox) Bring page redox-5 through week 15.
	Fri 12/4	Chapter 19
15	Tue 12/8	Chapter 19, Bring Experiment 12 to lecture today (Exp. 12 lecture is mandatory for all students).
	Wed 12/9	Experiment 12: Qualitative Analysis (L13). Note—You must work alone on this lab.
	Thu 12/10	Chapter 19
	Fri 12/11	<b>Quiz 8 (Chapters 18-19),</b> Chapter 20 (Nuclear Chemistry)
16	Tue 12/15	Exercise C: Equations (L14), Open book and notes. Bring your copies of Exps 3 & 6 if you have them. Note—You must work alone on this lab.
	Wed 12/16	Experiment 12: Qual. Analysis (L15). Note—You must work alone on this lab. Check-out.
	Thu 12/17	<b>Test 4 (Chapters 16-20)</b>
	Fri 12/18	<b>Final</b>

## 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 aTueg 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 experimental data, and infer the presence or absence of specific ions in an unknown mixture.

### Keep Track of Your Grades

EQ	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	L1	L2	L3	L4

L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	T1	T2	T3	T4	Final

Please refer to the course website ([www.elcamino.edu/faculty/agrant](http://www.elcamino.edu/faculty/agrant)) for the following information:

Course Description, Course Prerequisites, Student Learning Outcomes, Assessment Activities, ECC Policy on Attendance, ECC Statement of Student Conduct, American Disability Act Statement