

Chemistry 4: Beginning Chemistry Fall 2009
Dr. Soshanna Potter

Lectures (CHEM 101):
Tuesday and Thursday 8:00-10:05 am

Friday 8:00 - 10:01 am
Lab (CHEM 164): Wednesday 8:00 - 11:10 am
Email: spotter@elcamino.edu
Office: CHEM 116
Phone: (310) 660-3593 x 6010
Office Hours: Tuesday 1:00 pm to 2:00 pm

Wednesday 12:00 pm to 1:00 pm
Thursday 10:00 am to 11:00 am
and by appointment

PREREQUISITES: Math 80 or equivalent

REQUIRED MATERIALS:

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- Textbook: Introductory Chemistry, 4th Edition, Cracolice and Peters.
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- Supplement: Chemistry 4, McCleod, et al.
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- Scientific calculator (Programmable, graphing, and cell phone calculators are NOT permitted on exams).
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- Safety Goggles: Required for laboratory (Instructor approved).

GRADING POLICY:

Quizzes (8 x 25 pts + 20 pts element quiz): 220 pts
Exams (4 x 100 pts): 400 pts
Lab reports and exercises: 180 pts
Final: 200 pts
Total 1000 pts

Final Grades will be assigned according to the following distribution:

A: 88-100% B: 78-87% C: 65-77% D: 54-64% F: 0-54%

ASSIGNMENTS:

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- Labs: Laboratory assignments are listed on the class schedule. Students should read the manual carefully and come to the lab with a good understanding of the experiment at task. There are no makeup labs and absences will result in zeros (unless the absence has been previously excused; see below). Students who arrive late will receive a penalty or asked to leave depending on how much of the lab

lecture was missed. Writing something on another student's lab paper, bringing in previously graded experiments, or copying a sentence or piece of data is considered cheating. You must do independent work. We will be doing 11 labs and each lab is worth 10 pts (Lab Experiments 3 and 6 are worth 20 pts).

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Exercises: We will be doing three in-class exercises during the course of the semester. These exercises can be found in your supplement. Each exercise is worth 20 pts.

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Quizzes and Exams: Quizzes and exams will be given on the dates listed on the class schedule. There are no makeup quizzes or exams and absences will result in zeros unless previously excused (see below).

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Final Exam: The final exam will be comprehensive.

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Homework: Homework problems from the text will be suggested for each chapter. Homework will not be graded or collected. However, it is highly recommended that students devote time to practicing these problems as part of their study routine.

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If you have a documented disability and wish to discuss academic accommodations, please contact me as soon as possible.

Cheating is not tolerated and the El Camino Standards of Student Conduct will be strictly enforced.

ATTENDANCE AND ABSENCES:

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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.

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No makeup exams or quizzes will be given. There are no makeup laboratories. In certain situations students may be excused. To discuss a situation, you must contact Dr. Potter by email or by phone a least one day before the next class. Excused absences are typically due to illness and emergencies. Appointments and travel will generally result in unexcused absences. Students with excused absences will be given special consideration at the end of the semester. All unexcused absences will result in a score of zero for that exam.

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 chemical formulas, and then correlate compounds 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 product.

7.

Solve problems and express answers in scientific and decimal notation with correct units and significant

figures. Use logarithms to convert among 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. Demonstrate basic laboratory skills, including making, recording, and evaluating observations of chemical systems.

11. 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.

12. Create graphs from raw data and evaluate the graphs.

STUDENT LEARNING OUTCOMES:

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Students will practice safe laboratory procedures by putting their goggles on at the beginning of a chemistry lab experiment involving burners or chemicals, and by keeping their goggles in place during the entire course of the experiment. Students will not remove their goggles until the students are leaving or until the instructor has said that it is safe to do so (whichever comes first).

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On a written exercise, given the names of chemical compounds, students will be able to write the correct reactant formulas, states of matter (when required), identify reaction type, predict the formulas of products, and balance the chemical equation.

STUDY SUGGESTIONS:

To succeed in this class, I recommend:

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Reading each chapter and lab assignment before coming to class. This practice will help with your understanding of the material as well as performance.

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Asking questions. If you don't understand something or need clarification, please ask your question at any time during the lecture. If you wish further help, I encourage you to make an appointment with me to meet one on one. I want you to succeed!

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Practicing problems over and over. Do the suggested homework problems. Form study groups with your classmates to help develop your problem solving skills. Plan on studying everyday.

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Feeling comfortable with math. Much of the work we will be doing in Chem 4 requires intermediate math and algebra. Some students struggle with chemistry because they don't have the required math skills. Please see me if you feel this is the case with you.

Class schedule:

Date Day Topic* Quizzes/Exams

Week 1

9/1 T Introduction and Chapter 2: Matter and Energy

9/2 W Lab: Safety Video and Chapter 3: Measurement and Chemical Calculations

9/3 Th Chapter 3: Measurements

9/4 F Chapter 4: Gases

Week 2

9/8 T Chapter 4 Quiz 1

9/9 W Safety and Check-in. Lab experiment 1 A-G: Burners (Remember goggles, closed-toed shoes, and supplement)

9/10 Th Chapter 5: Atomic Theory Elements Quiz

9/11 F Chapter 6: Chemical Nomenclature

Week 3

9/15 T Chapter 6 Quiz 2

9/16 W Lab Experiment 2: Measurements

9/17 Th Chapter 6

9/18 F Nomenclature Exercise

Week 4

9/22 T Chapter 7: Chemical Formula Relationships Exam 1

9/23 W Lab Experiment 7: Charles' Law

9/24 Th Chapter 7

9/25 F Chapter 7 (Last day to drop without notification on record)

Week 5

9/29 T Chapter 8: Chemical Reactions

9/30 W Chapter 8

10/1 Th Chapter 8 and Chapter 9: Chemical Change

10/2 F Chapter 9

Week 6

10/6 T Chapter 9 Quiz 3

10/7 W Lab Experiment 5: Hydrates

10/8 Th Chapter 9

10/9 F Chapter 9

Week 7

10/13 T Chapter 10: Quantity Relationships Quiz 4

10/14 W Lab Experiment 11: Conductivity

10/15 Th Chapter 10

10/16 F Chapter 10

Week 8

10/20 T Chapter 10 and Lecture on Experiment 3 (Mandatory) Exam 2

10/21 W Lab Experiment 3: Observations (20 pts)

10/22 Th Chapter 11: Atomic Theory

10/23 F Chapter 11

Week 9

10/27 T Lecture on Experiment 6 (Mandatory)

10/28 W Lab Experiment 6: Chemical Reactions (20 pts)

10/29 Th Chapter 12: Chemical Bonding

10/30 F Chapter 12

Week 10

11/3 T Chapter 13: Structure and Shape Quiz 5

11/4 W Chapter 13

11/5 Th Chapter 13

11/6 F Exercise B: Models

Week 11

11/10 T Chapter 14: Ideal Gas Law Quiz 6

11/11 W Lab Experiment 9: Ideal Gas Law

Date Day Topic* Quizzes/Exams
 11/12 Th Chapter 14 and Chapter 15: Gases, Liquids and Solids
 11/13 F Veteran's Day: No Class
 Week 12
 11/17 T Chapter 15 Exam 3
 11/18 W Lab Experiment 10: Titrations (solo lab)
 11/19 Th Chapter 15
 11/20 F Chapter 16 (Last day to drop with a "w")
 Week 13
 11/24 T Chapter 16 Quiz 7
 11/25 W Finish Lab Experiment 10
 11/26 Th Thanksgiving: No Class
 11/27 F Thanksgiving: No Class
 Week 14
 12/1 T Chapter 17: Acids and Bases and Lecture on Experiment 12
 (Mandatory)
 12/2 W Lab: Experiment 12: Qualitative Analysis -Knowns (solo lab)
 12/3 Th Chapter 17 and Chapter 18: Chemical Equilibrium
 12/4 F Chapter 18
 Week 15
 12/8 T Chapter 19: Redox reactions Exam 4
 12/9 W Lab: Experiment 12: Qualitative Analysis - Unknowns (solo lab).
 Lab Check Out
 12/10 Th Chapter 19
 12/11 F Chapter 20: Nuclear Chemistry
 Week 16
 12/15 T Chapter 20 Quiz 8
 12/16 W Exercise C: Equations and Review
 12/17 Th Comprehensive Final Final
 12/18 F

* Lecture topics may change at my discretion. Changes to the upcoming
 schedule will be announced in class.
 Please bring the Chem 4 Supplement to every class.