Chemistry 1A–Section 1198 **General College Chemistry** **Fall 2008**

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Office: Chem 132 Office Hours: 5:00 PM-5:50 PM T & Th and other times by appointment
Meeting times and locations: Lecture: T & Th 6:00-8:30, Chem 103 Lab: T & Th 8:35-10:40, Chem 165

Course description: This course details the chemistry of elements and their compounds in periodic groupings, transition metal complexes, chemical equilibrium, chemical thermodynamics, kinetics, atomic and molecular structure, aqueous solutions, net ionic equations, oxidation - reduction equations, electrochemistry and nuclear processes. In the laboratory, qualitative analysis of common metallic and nonmetallic ions will be performed, as well as additional experiments on selected lecture topics.

Course Objectives: Students will learn to think, observe, and develop conclusions using objective scientific methodology about the physical and chemical interactions that involve matter and energy. Skills needed to solve chemical problems in both, qualitative and quantitative manner will be developed to assure success in General Chemistry as well as in subsequent higher level science and engineering courses at ECC, CSU and UC campuses. Students are expected to learn how what is observed and measured on the macroscopic level is related to microscopic or molecular and atomic structures and processes. Students, moreover, will demonstrate the ability to work safely, efficiently, and accurately in both super-vised and independent situations. Successful students on exiting this course will possess a scientific mastery and a scientific world view that are essential to an educated person who resides in the twenty-first century.

Course prerequisites: Chemistry 4 with a minimum grade of C, or 1 year of high school chemistry ***and*** qualification by passing a chemistry placement test. You must also be eligible for Math 170

Textbook: *Chemistry: A Molecular Approach*, by Nivaldo Tro, ©2008.

Lab manual: *Chemistry 1A Laboratory Experiments*, by W.T. Scroggins and the El Camino College Chemistry Faculty

Additional required materials: You need to have approved chemical "splash" goggles and a scientific calculator having EXP, Log and Ln keys. You should be able to access web content using a web browser and be able to print course materials and on-line lecture notes.

Grading: Approximate total points

4 Exams	(120 points each)	480	44.2% of total possible
6-8 Quizzes	(15-20 points each)	120	11.0% of total possible
Lab Reports	(14 lab reports, 10-30 points)	245	22.6% of total possible
Final Exam	(comprehensive)	240	22.2% of total possible
Total Possible (tentative)		1085	

Grade Distribution:

Letter grades will be assigned based on the percentage of total points accumulated during the semester.

A 100 - 88.0% **B** 87.9 - 78.0% **C** 77.9 - 65.0% **D** 64.9 – 52.0% **F** 51.9 – 0%

Quizzes and Exams:

Quizzes will be given promptly at the beginning of class. They may be announced or a surprise, so be prepared. The quiz will take approximately 20-30 minutes. The lowest quiz grade will be dropped at the end of the semester. There will be no make-up quizzes.

Exams will use a combination of techniques (essay, problem solving, short answer, multiple choice, etc.) The format of the exam depends on the content of the material being tested. There will be no make-up exams. If you miss an exam, you will receive a zero on that test. The only way to remove the zero is to present a documented and satisfactory reason for missing the exam. The zero will be removed by assigning a score that is the average of all the other exams. A score of zero can be replaced only once during the semester.

Homework:

Homework is regularly assigned. Homework will drawn from the textbook, Chemistry 1A Supplement and handouts. Homework will not be collected; however, homework is essential to the course. You must do the homework when the lecture material is fresh in your mind.

Students are expected keep up with the course. The content of most lectures demands understanding of previous material for full comprehension. In other words, the material in the chapters is accumulative. Each new chapter requires an understanding of the previous chapter. If you have not studied Chapter 4 before we begin Chapter 5, you will not understand Chapter 5.

Laboratory:

There are no make-up labs. If you miss a lab, you must complete the calculations for data selected by the instructor. Data will be provided only once, after that you will get no credit for the lab.

Your lab report grade will be based on the accuracy and precision of your data, as well as how you analyze your data. Points will be deducted (10% of total points for report) for messy, unsafe, incomplete or late work.

You will work with partners for certain of the experiments so your measurements made in the lab are expected to be the same. Laboratory reports are intended to reflect your individual work in terms of explaining observations, performing calculations, drawing appropriate conclusions, and anything else involving the report. Collaborating with others in writing your report is considered cheating. See the section below.

Due dates for lab reports will be announced for each lab. Labs are considered on time if they are turned in before the end of roll call. Points (two) will also be deducted for late, incomplete or unacceptable pre-lab reports.

You must wear instructor-approved goggles to work in the laboratory. The bookstore sells appropriate safety goggles. Students will be asked to leave lab, and receive a grade of zero for repeated infractions of this rule.

Cheating will not be tolerated: This instructor believes that there is no justification for using and claiming the work of others as your own. Cheating, which includes plagiarism and falsification of laboratory data, is cause for expulsion from the college. See the 2007-2008 El Camino College Catalog, pp 28-30 for definitions, examples and consequences of cheating.

POLICIES & GUIDELINES FOR SUCCESS IN CHEMISTRY 1A

This course requires almost 4.5 continuous hours of attention from you on class days. Moreover, those hours come late in the day when you may not be at the top of your performance curve. Take good care of your personal needs so you will be as mentally sharp as possible. Be prompt and regular in your attendance. Promptness is also a matter of personal responsibility and courtesy to others.

Mobile phones, pagers, music players and games must be turned off during lecture and lab.

Quiz and exam questions will involve material covered in lecture and the text assignments. It is your responsibility to be present and on time for all exams and quizzes. No extra time will be allotted owing to late arrival. We all know about the unpredictability of traffic flow in the Torrance area and the availability of parking at this campus. Plan for uncertainty. There will be no make-up exams or quizzes.

Grades are earned. Grades will never be negotiated, appointed or gifted. You are responsible to learn the material fluently enough to do well on quizzes and exams. Working hard will earn you empathy. Working smart and managing your time will earn you the scores you want. Plan to spend no fewer than 10 hours per week on this course—in addition to time spent in class. Study effectively: read the texts before lecture; take good lecture notes; rewrite the lecture notes to look for holes or areas that are not yet clear; study the texts and your notes; do all the assigned problems, and then do some more. You cannot do well in Chemistry if you do not answer independently the assigned questions and solve the assigned problems. This is a guarantee! Make and use flashcards to help memorize symbols, names, terms, and formulas. Working with study partners or groups is especially recommended!

Success is a matter of preparation and repetition. Make use of all possible learning resources — your texts, the instructor (in class and during office hours), internet chemistry tutorials, human tutors if necessary, and your fellow students. Always remember that everything in Chemistry builds on itself, and the final exam is cumulative and comprehensive, so don't let any gaps develop!

Expectations. Upon entering this course, the student needs to be able to:

- Perform unit conversion problems
- Apply chemical nomenclature
- Understand basic atomic theory
- Write and balance chemical equations
- Propose total and net ionic equations
- Demonstrate solving of basic stoichiometric problems
- Identify fundamental gas laws
- Draw elementary Lewis structures
- Calculate the molar masses of compounds
- Express numbers in scientific notational form
- Solve linear equations
- Demonstrate factoring expressions, including finding the greatest common factor
- Evaluate and solve logarithmic problems
- Create algebraic expressions from word problems
- Interpret linear and quadratic graphs
- Design graphs for linear expressions
- Understand and Follow safe practices in the laboratory

Chem 1A – 1198 Tentative Lecture and Laboratory Schedule

Week	Date	Lecture	Lab
1	8/26, 8/28	Classes Begin, Course Introduction Chapter 1 – Matter & Measurement/Appendix A Ch. 2 – Atoms and Atomic Theory	Classes Begin, Course Introduction Lecture continued
2	9/2, 9/4	Ch. 2 – cont'd Chapter 3 – Molecules, Compounds , & Chemical Equations	Check-in, Lab Safety Exp A – Gravimetric & Volumetric Equipment (10pts)
3	9/9, 9/11	Ch. 3 – cont'd	Exp 17 – Ions in Solutions (15pts)
4	9/16, 9/18	Chapter 4 – Chemical Quantities & Aqueous Reactions Introduction to Reactions in Aqueous Solutions; ChemCompact G (supplement **Exam 1 (Ch. 1-4)**	ChemCompact G (supplement)
5	9/23, 9/25	Chapter 5– Gases	Exp 18A – Strength of Oxidizing and Reducing Agents (P, 15 pts) Exp. 7 – Determination of the Molar Mass of Gaseous Carbon Dioxide (P, 15 pts)
6	9/30, 10/2	Chapter 6 –Thermochemistry, Table B in Appendix II	Exp. 14 – Acid-Base Titration: Part I (P, 15 + 10 pts) Exp. 14 – Acid-Base Titration: Part II)
7	10/7, 10/9	Ch. 6 – cont'd	Exp 1 – Analysis for Sulfate Ion (P, 15 + 10 pts). 3 periods needed

8	10/14 10/16	Chapter 7 – The Quantum Mechanical Model of the Atom **Exam 2 (Ch. 5-7, part)**	Complete Exp.1 Exp. 2 – Calorimetry (do lab) (P, 25 pts)
9	10/21, 10/23	Ch. 7 – cont'd Ch. 8 – The Periodic Properties of the Elements	Exp. 4 –cont'd Exp 3 – Atomic Spectra and Energy Levels (P, 15pts)
10	10/28, 10/30	Ch. 8 – cont'd Ch. 9 – Chemical Bonding I: Lewis Theory	Exp 4 – Solution Concentration by Spectrometry (P, 20 + 10 pts)
11	11/4, 11/6	Chapter 10 – Chemical Bonding II: Molecular Shapes, Valence Bond Theory and Molecular Orbital Theory Chapter 20 Organic Chemistry	Exp. 8 – Lewis Structures (E,10 pts) Exp. 9 – Model Making – Geometry (E,10pts)
12	11/11, 11/14	Ch. 20 – cont'd **Exam 3 (Ch. 8-10)** Ch. 11 – Liquids, Solids and Intermolecular Forces.	
13	11/18, 11/20	Ch. 11 – cont'd and intermolecular forces Chapter 12- Solutions	Exp. 13 – Crystal Lattices (Metallic) (P,E, 20 pts)
14	11/25, *11/27* *Holiday*	Ch. 12– cont'd	Exp. 13 – Crystal Lattices (Ionic Salts)
15	12/2, 12/4	Ch. 12 – cont'd Chapter 15– Acids and Bases **Exam 4 (Ch 20, 11, 12)**	Exp 16 – Strength of Acids and Bases (P, 15 + 5 pts) Check-Out
16	12/9, 12/11	Ch. 15 cont'd **Final Exam, Comprehensive Coverage**	

P: denotes prelab assignment due for the experiment
S: indicates material found in the Scroggins Chemistry 1A Laboratory Supplement
E: denotes a laboratory exercise rather than an experiment