

**General Chemistry, Chem. 1A-1192, 5 Units**  
**El Camino College, Division of Natural Sciences**  
**Fall 2008**

**Instructor:** Lida Latifzadeh Masoudipour, Ph.D.

**Lecture:** M, W, 8:00- 9:25 AM, Chem. 103 and Tu, Th, 8:00-9:01 AM, Chem. 165.

**Lab. :** Tu and Th, 9:05-11:00 AM, Chem. 165.

**Office hours:** Tu and Th, 7:30 -7:55 AM, Chem. 132 or by appointment.

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**Course Prerequisite:** Chemistry 4 with the grade of C or better; or one year high school chemistry or passing the El Camino College Chemistry Placement test. Also, eligible for Math 170.

**Course Description:** Chemistry 1A covers fundamental theory and principles of atomic and molecular structure, physical states and chemical reactions. These include measurements, dimensional analysis, matter, inorganic and organic nomenclatures, modern atomic theory, chemical bonds, molecular polarity / non polarity, intermolecular forces, crystalline solid state, chemical reactions, thermodynamics, chemical calculations, ideal gases and real gases, solutions, chemical equilibrium, theories and strength of acids and bases.

**Course Objectives:** According to the list of course objective as stated in course outline for E Camino College students will be able:

1. to use scientific terminology more efficiently.
2. to name and write chemical formulas of inorganic compounds and organic compounds
3. to write chemical equations, predict the chemical reactions and to perform chemical calculations.
4. to understand principles of modern and quantum theory of atomic structure.
5. to construct chemical bonds, the corresponding Lewis structure, and to determine molecular shape and molecular polarity/non polarity.
6. to apply the 1<sup>st</sup> law of thermodynamics to calculate the heat of reaction and bond energies.
7. to determine intermolecular forces and relate them to the properties of solids, liquids and gases.
8. to understand the kinetic molecular theory of gases to explain the behavior of ideal gases, differentiate between ideal gas and real gas, calculate ideal gas laws and gas-stoichiometry.
9. to understand properties of aqueous solution, to perform concentration calculations and to explain the Colligative properties.
10. to understand the theories of acids and bases and to predict strength of acids and bases.

**Required Materials:**

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

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

**Calculator:** Scientific calculator (logarithm and exponents)

**Goggles:** Safety goggles approved by instructor.

**Scantron:** Scantron number 882

#### Useful Web. Addresses:

<http://www.jce.divched.org/JCEDLib/QBank/collection/ConcepTests/general.html>

<http://members.aol.com/profchm/genchm1.html>

#### Grading: Approximate total points

4 Exams	100 points each	400 points
6 Quizzes	20 points each	120 points
Lab. Reports	14 lab. reports, each 10 points	140 points
Lab. Participation (Being on time, wearing goggles, etc.)		60 points
Practice Problems (Problem Solving)		120 points
Final Exam		200 points
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Total Possible Points		1040 points

#### Grade Distribution:

Letter grades are based on the percentage of total points:

A: 100 – 88.0%

B: 87.9 – 79.0%

C: 77.9 – 65.0%

D: 64.9 – 52.0%

F: 51.9% - 0%

**Quizzes:** Quizzes are given at the beginning of class. Each quiz will take 15 minutes. If you show up late the time of quiz will not be extended. **There is no make up quiz.** You can miss only one quiz by providing a valid document otherwise you will get the score of zero for the missing quiz.

**Exams:** Exams will be given at the beginning of lab. The maximum time for each exam is 2 hours depending on the materials being tested. Exams are multiple choice and you are responsible for anything covered and discussed in the lecture according to the course curriculum requirement. In general, materials discussed or stressed in the class are what the instructor believes to be most important and most likely to be stressed on exams. The first exam will cover the materials from the beginning of the semester until approximately the date of the exam. The second test will cover the materials after the first exam. The third exam will cover the materials after the second exam and the fourth exam covers the course subjects after the third exam. However, some of the earlier materials are required for understanding and should not be forgotten. **Failure of taking final exam will result in receiving grade of F in this course.**

**There will be no make up exam, you can miss one exam by providing a valid document otherwise you will get grade of zero for the missing exam.**

**Practice Problems:** There is no homework but it is highly recommended that you try the problems first on your own. It is also in your own self-interest to solve as many problems to understand clearly the topics presented in the lecture.

Some practice problems are given during problem solving session and the problems are assigned at the day of the problem solving session. You are required to participate the problem solving sessions to get the problems and return them at the end of the session. You miss one problem solving session by providing a valid document otherwise you will get zero grade for missing the practice problems.

**Attendance:** If you miss any lecture, you are responsible for any announcement and the materials covered in the lecture.

**Cheating is not tolerated.** There is no justification for using and claiming the work of others as your own. See the 2007 – 2008 El Camino College Catalog, P. 28-30 for definitions, examples and consequences of cheating.

**Laboratory:** If you miss one lab. there will be no make up lab. You can miss one lab. by providing a valid document, otherwise you will get the score of zero for the missing lab. You must be on time in lab., points will be marked down from your lab. report upon arriving late in the lab. :

Number of minutes late in the lab.	Number of points being marked down
10	1
20	2
30	3
> 30	No lab.

You will work with partners for certain of the experiments so your data must be the same. Lab. reports are intended to reflect your individual work in term of observation, performing the calculations, drawing appropriate conclusions,... After finishing each experiment you are required to get my initials on your data sheet in order to grade your lab. report. The lab. report without initials on the data sheet will result in getting grade of zero for that lab. report.

Due dates of lab. reports will be announced. for each lab.

You must wear instructor-approved goggles in order to work in the lab. The appropriate goggles are sold in the book store. Students without having goggles will be asked to leave the lab. and receive grade of zero for repeated infractions of this rule.

### **Policies and Guidelines for Success in Chemistry 1A**

This course requires 5 hours of lecture and 4 hours of lab. Quiz and exam questions involve the materials covered in the lecture and text assignments. It is your responsibility to be present on time for all quizzes and exams. No extra time will be allotted owing to late arrival. We all know about the unpredictability of traffic flow in Torrance area and the availability of parking at this campus. Plan for uncertainty. There will be no make up exam and quiz.

**Grades are earned.** Grades will never be negotiated, appointed or gifted. It is your responsibility to learn the course materials (subjects) fluently to do well in quizzes and exams. Study constantly and effectively and manage your time for studying during the

semester. You are required to answer the assigned questions and solve the assigned problems independently.

**Success is a matter of preparation and repetition.** Make use all possible resources: your textbook, the lecture notes, internet chemistry resources, LRC of the Department, and your fellow students. Please keep in mind that everything in chemistry builds on itself and the final exam is cumulative and comprehensive, so do not let any gaps develop.

### Tentative Lecture and Laboratory Schedule

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

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

Week	Date	Day	Lecture/Quiz	Lab./Exam
1	08/25	M	Review and Ch1: Matter, Measurements and Problem Solving	Introduction: Safety and Check-in  Review and Ch.1: Problem Solving
	08/26	Tu	Review and Ch.1 – cont'd	
	08/27	W	Review and Ch.1-cont'd	
	08/29	Th	Ch. 2: Atoms and Atomic Theory	
2	09/01	M	<b>Labor Day Holiday: no class</b>	Expt. A: Gravimetric and Volumetric Equipments  Expt.A-cont'd
	09/02	Tu	Ch. 2-cont'd	
	09/03	W	Ch.2-cont'd	
	09/04	Th	<b>Quiz I : Ch.1 and review</b> Ch.2: problem Solving	
3	09/08	M	Ch.7: The Quantum Mechanical Model of Atom	Graphical Analysis and Presentation of Data using Excel**  Graphical Analysis –cont'd
	09/09	Tu	Ch.7-cont'd	
	09/10	W	Ch.7-cont'd	
	09/11	Th	Ch.7: cont'd, Problem Solving	

Week	Date	Day	Lecture/Quiz	Lab./Exam
<b>4</b>	09/15	M	Ch. 8: Periodic Properties of Elements	Expt.3: Atomic Spectra and Energy Levels  Expt.3: Atomic Spectra and Energy Levels
	09/16	Tu	Ch.8-cont'd	
	<b>09/17</b>	<b>W</b>	<b>Quiz II: Ch.2,7</b> Ch.8-cont'd	
	<b>09/18</b>	Th	Ch.8 : Problem Solving Exam I Review	
5	09/22	M	Ch.3: Molecules, Compounds and Chemical Equations	<b>Exam I: Ch.1,2,7</b>  Inorganic Nomenclature and Organic Functional Groups**
	<b>09/23</b>	<b>Tu</b>	Ch.3-cont'd	
	09/24	W	Ch.3-cont'd	
	09/25	Th	Ch.3-cont'd Problem Solving	
<b>6</b>	09/29	M	Ch.9: Chemical Bonding I: Lewis Theory	Expt.8:Lewis Structures  Expt.8-cont'd Expt.10: Organic Structures : discussion/Making Models
	<b>09/30</b>	Tu	<b>Quiz III: Ch.8,3</b> Ch.9-cont'd	
	10/01	W	Ch.9 –cont'd	
	10/02	Th	Ch.9-cont'd Problem Solving	
<b>7</b>	10/06	M	Ch.9: Chemical Bonding II Molecular Shapes, Valence Bond Theory and Molecular Orbital Theory	Expt. 10-cont'd  <b>Exam II: Ch. 8,3,9</b>
	10/07	Tu		
	10/08	W	Ch.9-cont'd Exam II Review	
	<b>10/09</b>	<b>Th</b>	Ch.9-cont'd	

\*\* The handout will be provided.

<b>Week</b>	<b>Date</b>	<b>Day</b>	<b>Lecture/Quiz</b>	<b>Lab./Exam</b>
<b>8</b>	10/13	M	Ch.9-cont'd Problem Solving	Expt.18A: Strength of Oxidizing and Reducing Agents  Expt.18A-cont'd
	10/14	Tu	Ch.4: Aqueous Reactions and Chemical Quantities	
	10/15	W	Ch.4-cont'd	
	10/16	Th	Ch.4-cont'd	
<b>9</b>	10/20	M	Ch.4: Problem Solving	Expt.1: Gravimetric Analysis of Sulfate Ion  Expt.1-cont'd
	10/21	Tu	Ch.6: Thermochemistry	
	<b>10/22</b>	<b>W</b>	<b>Quiz IV: Ch.4</b> Ch.6-cont'd	
	10/23	Th	Ch.6-cont'd	
<b>10</b>	10/27	M	Ch.6-cont'd Problem Solving	Expt.2: Calorimetry, Hess's Law  Expt.2-cont'd
	10/28	Tu	Ch.11: Solids, Liquids and Intermolecular Forces	
	10/29	W	Ch.11-cont'd	
	10/30	Th	Ch.11-cont'd and Problem Solving	
<b>11</b>	11/03	M	Ch.5: Gases Exam III Review	<b>Exam III : Ch. 4,6,11</b>  Expt.13: Crystal Lattices (Metallic Solids)
	<b>11/04</b>	<b>Tu</b>	Ch.5-cont'd	
	11/05	W	Ch.5-cont'd	
	11/06	Th	Ch.5-cont'd	

<b>Week</b>	<b>Date</b>	<b>Day</b>	<b>Lecture/Quiz</b>	<b>Lab./Exam</b>
<b>12</b>	<b>11/10</b>	<b>M</b>	<b>Veteran's Day Holiday: no class</b>	Expt.13: Crystal Lattices (Ionic Solids)  Expt.5: Analysis Mixture of KClO <sub>3</sub> /KCl Mixture
	11/11	Tu	Ch.5-cont'd and Problem Solving	
	11/12	W	Ch.12: Solutions	
	11/13	Th	Ch.12-cont'd	
<b>13</b>	<b>11/17</b>	<b>M</b>	<b>Quiz V: Ch. 5</b> Ch.12-cont'd	Expt.5-cont'd  Expt.7: Determination the Molar Mass of CO <sub>2</sub>
	11/18	Tu	Ch.12-cont'd Problem solving	
	11/19	W	Ch.14: Chemical Equilibrium	
	11/20	Th	Ch.15: Acids and Bases	
<b>14</b>	11/24	M	Ch.15: Acids and Bases	Expt.7: cont'd  <b>No lab.</b>
	11/25	Tu	Ch.15: cont'd	
	11/26	W	Ch.15-cont'd and problem Solving	
	<b>11/27</b>	<b>Th</b>	<b>Thanksgiving Holiday: no class</b>	
<b>15</b>	12/01	M	Ch.20: Organic Chemistry	Expt.14: Acid/Base Titration  <b>Exam IV: Ch. 5,12,14,15</b>
	12/02	Tu	Ch.20-cont'd	
	<b>12/03</b>	<b>W</b>	<b>Quiz VI: Ch.12,14,15</b> Exam IV Review	
	<b>12/04</b>	<b>Th</b>	Ch.20-cont'd Special Topics: Main Group Elements: Non metals and Hydrogen	

<b>Week</b>	<b>Date</b>	<b>Day</b>	<b>Lecture/Quiz</b>	<b>Lab./Exam</b>
<b>16</b>	12/08	M	Special Topics -Cont'd	Expt.14-cont'd and Check-out
	12/09	Tu	Wrap-up and Review	
	12/10	W	Review	
	<b>12/11</b>	<b>Th</b>	<b>Final Exam: Cumulative 8:00-11:00 AM</b>	