

# CHEMISTRY 1A GENERAL CHEMISTRY COURSE SYLLABUS AND SCHEDULE

## Introduction:

Chemistry 1A is an introductory course for students who have had a reasonable background in high school chemistry. Proficiency in basic high school algebra (including solving for unknown variables, manipulating exponentials and logarithms, operating a calculator, etc.) is expected. A range of topics will be covered including: stoichiometry, gas laws, chemical equilibrium, acids and bases, acid and base equilibrium, and aqueous solution equilibrium (including solubility product constants, complex ion formation, etc.). It is hoped that you will develop new skills in chemistry and new insights into the chemical workings of everyday life.

Please note that this reflects the revised Introductory General Chemistry series. Upon completion of Chem 1A, you should be prepared to enter the revised 1B and 1C courses. Chem 1B will cover the following topics: thermochemistry and the first law of thermodynamics, atomic theory, bonding and molecular structure, colligative properties of solutions, and intermolecular forces. Chem 1C is devoted to the following: the second law of thermodynamics, electrochemistry, chemical kinetics, liquids and solids, transition metal chemistry, and nuclear chemistry.

The syllabus and schedule outlined for Chem 1A are subject to updates; please check frequently for revisions.

## Instructor:

Dr. Randa Roland      Thimann 317      roland@chemistry.ucsc.edu      (831)459-5486  
course website is available through UCSC chemistry page: chemistry.ucsc.edu

## Text/Required Materials:

*Chemical Principles*, 5th Edition, by Steven S. Zumdahl; scientific calculator.

*Study Guide* and *Partial Solutions Manual* to accompany *Chemical Principles* are optional.

## Lectures and Reading Assignments:

The class schedule includes reading assignments and weekly homework problems from the textbook. Reading of this material BEFORE the lectures is greatly encouraged. Homework assignments will be submitted at section (see schedule).

## Discussion Sections:

Each student should be enrolled in a discussion section. You MUST attend the section you enrolled in since your discussion leader will be giving quizzes and collecting any homework due. Your discussion leader will also be recording quiz and homework scores, both of which will count toward your final grade. Discussion sections begin the first week of instruction; section quizzes may start the second week.

You must attend the first discussion section to verify your enrollment into that section (and the class). "No Shows" will be dropped from the section roster and your place will be assigned to another person. Each section has a maximum size (no exceptions). Undersubscribed sections will be combined into larger sections.

## Exams and Grading:

Each week, a quiz may be given in discussion section. Three exams will be given. Course credit will be assigned approximately as follows: 5% for lecture participation, 10% for section performance (attendance, scholarship, quizzes, etc.), 10% for homework, and 75% for the exams. Students must be present at the exams at the appointed times.

If you miss an exam because of illness or other extenuating circumstance (travel for family matters is not considered to be an emergency circumstance), prior to the absence you must contact the instructor to discuss your situation. Make-up exams will not be offered but other mitigating measures may be taken to compensate for a properly justified absence. To pass this course you must score at least 50% of the total available points (note 50% is not a guarantee of a passing grade). Late work will not be accepted.

You are expected to be full participants in Chem 1A. We are dedicated to doing everything that is reasonable to help you learn the material. We present lectures and sections on time and within the appointed time slots, and we request that you show respect for your classmates and instructors by:

showing up to class and section on time and prepared;

not talking during lecture or discussion or in any way causing unnecessary disruptions (please turn off cell phones);

staying in your seat during lecture or discussion unless it is absolutely necessary to leave; and,

turning in all assignments on time.

Following these simple requests will enable all of us to focus on the endeavor that brought us together: learning chemistry.

### **Office Hours:**

The instructor will hold office hours once weekly for 1.5 hours and by appointment (time will be announced in class). We encourage you to use this time to clarify course material rather than to solve personal problems or grievances on grading. If any such situation arises it should be handled as follows:

Please write a concise note or email explaining your problem or point of view regarding any grading in which you believe there is a problem. Deliver your grievance to your TA who will review the material and attempt to resolve your difficulties (re-grade if appropriate). If this is not sufficient, the TA will set a special appointment with the instructor so that you may discuss the situation further.

### **Disability Resources:**

If you have a disability (visible or invisible), you are encouraged to talk with the instructor and your TA about it on a confidential basis so that we might collectively devise a strategy to overcome any barriers to ensure your success. You should also consult with the Disability Resource Center, 459-5635.

CHEM 1A-02 Fall 2007 LECTURE SCHEDULE (*Subject to Change*)*Please see the complete course syllabus on the web through [chemistry.ucsc.edu](http://chemistry.ucsc.edu)*

Date	Topic	Ch	HW#	HW Problems	Week Due
9/28	Course Outline; Introduction to Chemistry Math Review	1 App 1&2		You are responsible for all Ch 1 and Appendix 1&2 content	
10/1	Modern Atomic Structure & Theory Ions and Molecules	2	1	Ch 2: 32, 35, 38, 40, 42, 46, 53, 56, 60	10/8
10/3	Periodic Table; Intro to Bonding	2			
10/5	Compound Masses, Names & Formulas	2			
10/8	Atomic Masses; Moles & Molar Mass Percent Composition Chemical Formula Determination	3	2	Ch 3: 24, 26, 30, 34, 46, 48, 56, 60, 64, 66, 70	10/15
10/10	Chemical Equations Stoichiometric Calculations	3			
10/12	Catch-up and review	1 – 3			
10/15	Exam 1			Ch 1 – 3	
10/17	Properties of Water Aqueous Solutions (composition & reactions)	4	3	Ch 4: 14, 16, 18, 25, 30, 34, 38, 42, 46, 48, 50, 52, 54, 56, 58, 64	10/22
10/19	Precipitation Reactions Acid-Base Reactions & Titration	4			
10/22	Oxidation States; Redox Reactions	4			
10/24	Redox (cont.)	4			
10/26	Foundations of Gas Laws Ideal and Combined Gas Laws	5	4	Ch 5: 30, 32, 38, 46, 52, 58, 68, 72, 74	11/5
10/29	Gas Stoichiometry Dalton's Law of Partial Pressures	5			
10/31	Kinetic Molecular Theory	5			
11/2	KMT (cont.); Real Gases	5			
11/5	Exam 2			Ch 4 – 5	
11/7	Concepts of Equilibrium Equilibrium Condition & Characteristics	6	5	Ch 6: 18, 20, 22, 26, 30, 34, 40, 48, 50	11/16
11/9	Equilibrium Constant ( $K_{eq}$ ) & Expressions Heterogeneous Equilibria	6			
11/12	Holiday				
11/14	Extent of Reaction & Reaction Quotient Calculations	6			
11/16	Calculations (cont.) LeChâtelier's Principle	6			
11/19	Acids & Bases Acid (or Base) Strength pH Scale & Calculations	7	6	Ch 7: 17, 20, 22, 30, 34, 36, 44, 48, 50, 58, 62, 66, 76, 82, 84	11/27
11/21	Weak Acids & Calculations Strong & Weak Bases	7			
11/23	Holiday				
11/26	Polyprotic Acids	7			
11/28	Acid-Base Properties of Salts Calculations	7			
11/30	Acids & Bases – Common Ion Effects Acid-Base Buffers	8	7	Ch 8: 18, 20, 24, 28, 32, 46, 54, 72, 74, 76, 82, 84, 88, 94, 96	Not due
12/3	Titrations & pH Curves Acid-Base Indicators Polyprotic Acid Titrations	8			
12/5	Solubility Equilibria & $K_{sp}$ Common Ion Effects	8			
12/7	Selective Precipitation Complex Ion Equilibria	8			
12/11	Exam 3 (tentative)	12–3 pm		Ch 6 – 8	

Exams are 75% of your grade; lecture participation 5%; section participation, 10%; and, homework, 10%.

Randa Roland, Ph.D.

Thimann 317

459-5486

roland@chemistry.ucsc.edu