

## CHEMISTRY 1C GENERAL CHEMISTRY COURSE SYLLABUS AND SCHEDULE

### Introduction:

Welcome to Chemistry 1C, the third quarter of our introductory chemistry series. To enroll, you must pass Chemistry 1A and 1B (or equivalent courses). We will cover a range of topics including entropy, free energy, and the second law of thermodynamics; electrochemistry; kinetics; intermolecular forces, liquids, solids, and solutions; equilibrium (review); transition metal chemistry; and, nuclear chemistry; (chapters 10, 11, 15, 16, 17, 7/8, 19, 20). The concepts learned in this course are instrumental for future studies in all areas of chemistry including biochemistry, organic chemistry, physical chemistry, environmental chemistry, medicinal chemistry, and materials chemistry. We hope that the knowledge derived from this course will give you insight into the chemical workings of our lives and the world around us.

### Instructor:

Dr. Randa Roland      Thimann 317      roland@chemistry.ucsc.edu      (831)459-5486  
See course homepages at chemistry.ucsc.edu

### Text/Required Materials:

*Chemical Principles*, 6th Edition, by Steven S. Zumdahl; scientific calculator.

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

### Optional Texts:

*Chemistry: The Molecular Science*, 4<sup>th</sup> Edition by Olmsted & Williams

*Preview of General Chemistry* by Carroll (helpful with math and orbitals)

### 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). To really learn science, it is important to learn how to solve problems. Thus, there will be substantial homework assignments. The homework problem sets are meant to be challenging, so you should be willing and prepared to spend time outside of class and in your discussion sections working on these problems.

### Discussion Sections:

You should be enrolled in a discussion section. Sections are designed to help you understand and master the material. Discussion sections begin the first full week of instruction. You must attend the first discussion section to verify your enrollment into the class. "No Shows" will be dropped and your place will be assigned to another person. Each section has a maximum size (no exceptions).

Attending section is good preparation for exams, and you should plan to attend your discussion.

### Exams and Grading:

Course credit will be assigned approximately as follows: 10%, lecture participation and/or homework; and, 90%, exams. Late work will not be accepted. Three exams are scheduled, and you must be present at the exams at the appointed times. This grading breakdown is tentative and may be subject to modification – changes will be announced in class. Below C grades on any or all of your exams may result in a failing grade.

If you miss an exam because of illness or other extenuating circumstance (travel for family matters is not considered to be an emergency circumstance), you must contact the instructor to discuss your situation prior to the absence. Make-up exams will probably not be offered but other mitigating measures may be taken to compensate for a properly justified absence. Your final grade will depend on your overall performance (note: if you do not pass the exams, it is unlikely that you will be able to pass the course).

**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.

**Final Words:**

You are expected to be full participants in the lecture class. We are dedicated to doing everything that is reasonable to help you learn the material of Chem 1C. Furthermore, we will be prepared to present lectures on time and within the appointed time slots. We request that you show respect for your classmates and instructors by: 1) showing up to class on time and be prepared; 2) not talking during lecture or discussion or in any way causing unnecessary disruptions; 3) staying in your seat during lecture or discussion unless it is absolutely necessary to leave; and, 4) turning in all homework assignments on time. Following these simple requests will enable all of us to focus on the endeavor that brought us together: *learning chemistry*. Professor Jin Zhang has a suggested learning strategy that is very sensible, so try to use it: **P-LTA-R** (Preview-Listen/Think/Ask-Review).

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CHEM 1C-02 Spring 2009 LECTURE SCHEDULE (*Subject to Change*)Please see the complete course syllabus on the web: [chemistry.ucsc.edu](http://chemistry.ucsc.edu)

Date	Topic	Ch	HW#	HW Problems	Due
3-30	Introduction, math	App 1&2			
4-1	Spontaneous processes, ideal gases, entropy	10	1	Ch 10: 16, 25, 39, 43, 45, 50a, 53, 65a, 76a	4-13
4-3	Entropy and changes, second law, temperature effects	10			
4-6	Entropy, free energy, and changes	10			
4-8	Free energy and equilibrium, work	10			
4-10	Reversible/irreversible processes, adiabatic	10			
4-13	Electrochemistry and redox, cells	11	2	Ch 11: 17 (calculate $E^0$ only), 25, 33, 41a, 47, 51a-c	4-24
4-15	Reduction potentials, batteries	11			
4-17	Electrolysis	11			
4-20	Exam 1				
4-22	Reaction rates/kinetics, rate laws	15	3	Ch 15: 17, 19, 29, 31, 36, 43, 51, 53, 55, 67, 73	5-4
4-24	Rate law forms, differential and integrated	15			
4-27	Mechanisms and models	15			
4-29	Continued	15			
5-1	Continued	15			
5-4	Liquids and solids, intermolecular forces	16	4	Ch 16: 15, 17, 39, 43, 45, 83, 91	5-11
5-6	Metallic and network covalent bonding, molecular solids, ionic solids	16			
5-8	Cell structures, state changes, phase diagrams	16			
5-11	Equilibrium review	6			
5-13	Exam review				
5-15	Exam 2				
5-18	Aqueous equilibrium review	7, 8			
5-20	Continued	7, 8			
5-22	Transition metal chemistry	19	6	Ch 19: 7, 21, 25, 45, 47	<i>Not due</i>
5-25	Holiday				
5-27	Transition metal chemistry continued	19			<i>Not due</i>
5-29	Continued	19			
6-1	Nuclear chemistry	20	7	Ch 21: 5, 11, 15, 17, 37	<i>Not due</i>
6-3	Continued	20			
6-8 to 6-11	Final exam				

Exams are 90% of your grade; attendance and/or homework, 10%.

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