CHEMISTRY 1A GENERAL CHEMISTRY COURSE SYLLABUS AND SCHEDULE

Introduction: Chemistry 1A is a general chemistry course for students who have a reasonable background in high school chemistry. Proficiency in high school algebra (including solving for unknown variables, manipulating exponentials and logarithms, operating a calculator, etc.) is expected. Topics covered include: stoichiometry, gas laws, chemical equilibrium, acids and bases, acid and base equilibrium, and aqueous solution equilibrium (including solubility product constants, complex ion formation, etc.). These correspond to chapters 2 – 8 and appendices 1 and 2 in the text. Please note that this reflects the revised Introductory General Chemistry series; Chem 1A is not a review class and is quite rigorous. The syllabus/schedule are subject to updates; please check for revisions.

Instructor:

Dr. Randa Roland   Thimann 317   randaro@ucsc.edu   (831)459-5486
course website is available through http://tinyurl.com/chem1afall17

Text/Required Materials:

Title: Chemical Principles w/ Webassign multi-term access code; Edition: 7th; Author: Zumdahl & DeCoste
ISBN: 978-1-285-12615-9
Homework through http://webassign.net   **Webassign class key is ucsc 4378 8418**

Lectures and Reading Assignments: The class schedule includes reading assignments and suggested problems from the textbook. You should read the material before coming to lecture.

Discussion Sections: Sections are designed to help you understand and master the material, and they begin the first full week of instruction. Each section has a maximum size (no exceptions). Attending section is good preparation for KDs, and you should plan to attend (even though they are technically optional).

Knowledge Demonstrations: In-class exercises in which you show me what you know are 85% of your grade*: midterm 1 is 15% of your grade; midterm 2, 30%; and, the final, 40%, and you must be present for these on time and at the appointed times. This grade breakdown is tentative and may be subject to modification – changes will be announced in class.
    Below C grades on any or all of your KDs, including the final, may result in a failing grade in the course.

If you are absent one or more of these days because of illness or other extenuating circumstance (travel for family matters is not considered an emergency circumstance), you must contact me to discuss your situation prior to the absence. Make-ups 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 earn 'C' grades on the knowledge demonstrations, it is unlikely that you will be able to pass the course).

Homework: Webassign homework assignments are 15% of your grade. It is all-or-nothing, with one free assignment. That means you must do every assignment (less one) by the due date (no extensions) and score 85-100% on them. We are here to help you achieve that goal.

Electronics in the classroom: These are a no. Please turn off cell phones, etc. Active learning means taking notes and solving problems, and active learning leads to HIGHER TEST SCORES. Please DO bring a calculator that can handle exponents/scientific notation.

Office Hours: I will hold office hours weekly (times will be announced in class).

Disability Resources: UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, as soon as possible in the academic quarter, preferably within 1 week. I also encourage you to discuss with me ways we can ensure your full participation in this course.

I encourage all students who may benefit to learn about the DRC and the UCSC accommodation process. You can visit the DRC website at drc.ucsc.edu. You can make an appointment and meet in-person with a DRC staff member. The phone number is 831-459-2089, or email drc@ucsc.edu.

Course Materials, Notes, Copyright and Intellectual Property:

All materials distributed in Chemistry 1A are protected by Copyright Law and are intended solely for the use of current Chemistry 1A students. These materials may not be shared, distributed or posted at websites without permission of the instructor. In addition, UC Policy prohibits the posting of lecture notes, formula sheets or any other materials derived from Chemistry 1A without consent of the instructor. Violation of these restrictions will result in disciplinary action. Please see UC Policy at http://its.ucsc.edu/security/copyright.html.

LECTURE SCHEDULE (*Subject to Change*) – *link through course website*
Below C grades on any or all knowledge demonstrations may result in a failing grade in the course.

Date	Day	Topic	Ch	Preview	Handout
9/29	1	Course Outline; Introduction to Chemistry; Atomic Theory; Ions & Molecules; Periodic Table; Bonding: Names and Formulas (*You are responsible for Ch 1, Ch 2, and App 1&2 content*)	App 1&2 Ch 2	Skim 2.2 – 2.5; Read 2.6 – 2.8; Skim 2.9; Skim 3.1 – 3.4, Read 3.5	Ch 2 #1,2 Ch 3 #1,2
10/2	2	Moles; Atomic & Molar Mass; % by Mass	3	Read 3.6	Ch 3 #3
10/4	3	%Composition, Formula Determination	3	Skim 3.7 – 3.8; Read 3.9	Ch 3 #4
10/6	4	Chemical Equations; Stoichiometric Calculations & %yield	3	Read 3.10	
10/9	5	Stoichiometric Calculations & Limiting Reactants		Skim 4.1 – 4.2; Read 4.3	Ch 4 #1
10/11	6	Properties of Water; Aqueous Solutions (composition, reactions)	4	Review Ch 2, 3, & 4.1-3	
10/13	7	Catch-up and review	2-4.3		
10/16	8	Knowledge Demonstration #1	2-4.3	Show me what you've learned ☺ Read 4.5 – 4.6; Skim 4.7; Read 4.8-9	Ch 4 #2
10/18	9	Precipitation Reactions	4	Read 4.10 – 4.11	Ch 4 #3
10/20	10	Precipitation (con't.); Acid-Base Reactions & Titration	4	Skim 4.12; Review Ch 4	Ch 4 #4
10/23	11	Acid-base neutralization (con't.); Oxidation States			
10/25	12	Redox Reactions	4	Skim 5.1 – 5.2; Read 5.3 – 5.4	
10/27	13	Redox (cont.)	4	Read 5.5; Skim 5.6; Read 5.7	Ch 5 #1
10/30	14	Foundations of Gas Laws; Ideal and Combined Gas Laws; Gas Stoichiometry, Partial Pressures	4	Skim 5.8 – 5.12	Ch 5 #2
11/1	15	Kinetic Molecular Theory	5	Review 4 – 5	
11/3	16	Catch-up and review	4 – 5	Show me what you've learned ☺	
11/6	17	Knowledge Demonstration 2	4 – 5	Read 6.1 – 6.3; Skim 6.4; Read 6.5 – 6.7	Ch 6 #1
11/8	18	Concepts of Equilibrium; Equilibrium Condition & Characteristics	6	Read 6.8; Skim 6.9	Ch 6 #2,3
11/13	19	Equilibrium Constant (K_{eq}) & Expressions; Heterogeneous Equilibria; Reaction Quotient	6	Read 7.1 – 7.3; take a *quick skim* through the rest of Ch 7	
11/15	20	Calculations ; LeChâtelier's Priniciple	6	I organize Ch 7 a little differently than the book…	Ch 7 #1
11/17	21	Acids & Bases, Acid (or Base) Strength; pH Scale & Calculations	7	…It's all about the H^+ and equilibrium	Ch 7 #2
11/20	22	Calculations - Strong Acids and Bases, Weak Acids and Bases	7	…Ask questions	Ch 7 #3
11/27	23	Calculations (cont.) - Acid-Base Properties of Salts; Calculations	7	…Read/review Ch 7 as we go Read 8.1 – 8.2; Skim 8.3; Read 8.4	
11/29	24	Calculations (cont.) - Polyprotic Acids	7	Read 8.5; Skim 8.6 – 8.7	Ch 8 #1, 2
12/1	25	Acids & Bases – Common Ion Effects; Acid-Base Buffers	8	Read 8.8; Skim 8.9 – 8.10	Ch 8 #3, 4
12/4	26	Titrations & pH Curves, Indicators; Polyprotic Acid Titrations	8	Review Ch 6 – 8	Ch 8 #5
12/6	27	Solubility, K_{sp}, Common Ion Effects	8	Review Ch 6 – 8	
12/8	28	Catch-up and Review	8	Review Ch 6 – 8	
12/12		Knowledge Demonstration 3, 4:00-7:00 (check me)	6 – 8	Show me what you've learned ☺	

Randa Roland, Ph.D.   Thimann 317   459-5486   randaro@ucsc.edu

If you would like more problems to practice, here are some suggested ones from the ends of the chapters.

Ch 2 34-38, 40-47, 50-54, 64, 68, 70
Ch 3 32-36, 38, 41, 46, 54-59, 67, 69, 77-83
Ch 4 16-23, 31-33, 38-39, 41, 44, 48, 51, 56, 60-61, 65-67, 71-73, 75-76
Ch 5 29-35, 47-49, 54, 63, 64, 75, 81, 82, 85, 86
Ch 6 19-29, 35-42, 44-47, 53-59
Ch 7 19, 21, 24, 27, 28, 43-46, 48-54, 56-59, 71, 72, 74-77, 81, 82, 87-89, 100-102
Ch 8 21-23, 25, 27, 31-33, 61-64, 69, 93-97, 100, 102, 103