

CH301H – Principles of Chemistry I: Honors
Fall 2012, Unique 51390
Tuesday / Thursday 11 am – 12:30 pm, WEL 2.304

Instructor: Dr. Lauren Webb
WEL 3.212B
lwebb@cm.utexas.edu
471-9361

Office Hours: Monday and Tuesday, 12:30 – 1:30 pm, or by appointment

Teaching Assistant: Rebika Shrestha
WEL 3.212A
rshrestha@utexas.edu
471-7851

TA Office Hours: Tuesday 2 – 3 pm and Wednesday 3 – 4 pm
WEL 2.306, Suite A

Required Textbook: *Principles of Modern Chemistry*, 7th edition
Oxtoby, Gillis, and Campion

Webpage: http://webb.cm.utexas.edu/courses/CH301H_Fall_2012_home.html

Course material, including the syllabus, daily lecture summaries, homework problems and solution keys, quiz solution keys, exam solution keys, and practice exams will be available on the course webpage. We will use Blackboard's grade center to post grades. I will periodically communicate important class announcements to you through email. It is very important that you update your UT directory information with the email that you check most often. I will also post these class announcements on the course webpage.

Course Objective: This course is an advanced exploration of the principles and foundations of modern chemistry. This course is intended for students who have had good chemistry preparation at the high school level and who wish to develop significantly more insight into the physical principles underlying the science of chemistry. After a brief review of classical bonding, we will study the foundations of quantum mechanics and apply these concepts to atomic and molecular structure, chemical bonding, and the experimental and theoretical methods that are used by modern chemists to study these phenomena. Near the end of the semester we will study the fundamental principles of classical and statistical thermodynamics. Throughout the course, I will encourage you to engage the ways that science in general and chemistry in particular affect your daily life.

This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

Lectures and Attendance: I will not be taking attendance, but I will also not be posting lecture notes. You may compare and copy lecture notes from classmates to make sure you have an accurate and complete set of notes for yourself, but I strongly discourage you from relying on others for your notes. To supplement your own note-taking, I will post daily summaries of what I consider to be the most important points from that day's lecture, but these will not be comprehensive.

Quizzes and Homework: There will be 6 closed-book quizzes given in class on Thursday. Quiz dates are given on the schedule below. This quiz will be given during the last 15 to 20 minutes of class and must be turned in when the class period ends at 12:15 pm. Your lowest score will be dropped. To help you prepare for these quizzes, each week I will post homework problems and the corresponding solution keys. It is up to you to practice these problems; we will not be collecting your answers, but if you don't do the homework you will probably find the quizzes very unpleasant. Your textbook is another wonderful source of practice problems.

Exams: There will be four 75 min open-book exams that will be given during the normal class time. Exam dates are noted on the schedule below, so plan now. There will be no makeup exams and no dropped scores. If you must miss an exam due to observance of religious holidays, you are required by the University to notify the instructor at least 14 days in advance. Otherwise, you can only make up an exam by providing documented proof of a major life trauma or emergency and only after consultation with the instructor. Semester exams will focus on material introduced since the previous exam; however, the subject that we are studying this semester is inherently cumulative, so you will be expected to be familiar with material not covered explicitly on each exam.

Exam Rooms: If your last name begins with A – L, please report to WEL 2.304. If your last name begins with M – Z, please report to WRW 102.

Final Exam: A 3 hr final exam will be given 12 December, 7 pm – 10 pm in a location TBA.

Grades:	Quizzes:	300 pts (5 at 60 pts. each)
	Exams:	400 pts (4 at 100 pts. each)
	Final:	300 pts

Grade: A = 850 and above
B = 700-849
C = 550-699
ntg < 549

Extra Credit: Three extra credit assignments worth 5 points each will be given throughout the semester.

CH108: CH108 (Conference Course – Intensive Chemistry Seminar) is a supplemental honors level enrichment and enhancement seminar that follows the course schedule of CH301H. CH108 is intended to develop your problem solving skills by working through comprehensive honors level problems in a group setting with immediate feedback from the instructor and TAs. This is

a 1 credit course that is graded on a Pass / Fail basis. Although it is not required for you to be enrolled in CH108 while taking CH301H, I strongly encourage you to do so.

CH108 meets Monday / Wednesday 5:00 – 6:15 pm in JES A303A/A305A (Unique 51700/51705). The first class day will be 5 September 2012.

Students with Disabilities: The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY. Any student with a documented physical or cognitive disability who requires academic accommodations should do this as soon as possible to request an official letter outlining authorized accommodations for this course. If the accommodation involves testing, you must remind the instructor at least 5 business days before the scheduled exam.

Honor Code: “The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.”

Cheating will not be tolerated in this course. When taking quizzes and exams, you may not use any electronic material to assist you except for a calculator for completing arithmetic. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced.

Schedule: The following is an outline and approximate schedule for topics covered this semester. The quiz and exam dates will not change. Any changes to the topic schedule will be reviewed in class.

Week	Date	Topic	Chapter	Assignment
1	30 Aug.	Introduction, the structure of the atom	1.4, App. A-B	
2	4 Sept.	Potential energy and ionization energy	3.3-3.4	Homework1-2
	6 Sept.	Electron affinity and electronegativity	3.5-3.6	Quiz 1
3	11 Sept.	Ionic and covalent bonding	3.8-3.9	Homework 3
	13 Sept.	Lewis dot structures	3.10	EC 1
4	18 Sept.	VSEPR	3.11	Homework 4
	20 Sept.	Waves and quantization of energy	4.1-4.2	Quiz 2
5	25 Sept.	de Broglie, Heisenberg, and Schrodinger	4.4-4.5	Homework 5
	27 Sept.	EXAM 1		EXAM 1
6	2 Oct.	The Bohr model	4.3-4.4	Homework 6
	4 Oct.	The Schrodinger Equation	4.5-4.6	Quiz 3
7	9 Oct.	The Hydrogen atom	5.1	Homework 7
	11 Oct.	Orbitals	5.1	EC 2
8	16 Oct.	Many electron atoms, QM, and the PT	5.3-5.5	Homework 8
	18 Oct	EXAM 2		EXAM 2
9	23 Oct.	Diatomics	6.2-6.4	Homework 9
	25 Oct.	Heteronuclear diatomics	6.5-6.7	Quiz 4
10	30 Oct.	Polyatomics	6.9-6.10	Homework 10
	1 Nov.	Organic molecules	6.10	Quiz 5
11	6 Nov.	Nomenclature	7.2-7.4,7.6	Homework 11
	8 Nov.	EXAM 3		EXAM 3
12	13 Nov.	Ideal gas law	9.1-9.4	Homework 12
	15 Nov.	Ideal gas law continued	9.5-9.7	EC 3
13	20 Nov.	Intermolecular forces	10.1-10.2	Homework 13
	Bring a can of food to class on 22 November for 2 extra credit points			
	22 Nov.	Thanksgiving, no class		
14	27 Nov.	Liquids and phase equilibria	10.3-10.6	Homework 14
	29 Nov.	EXAM 4		EXAM 4
15	4 Dec.	First law of thermodynamics	Chapter 12	Homework 15
	6 Dec.	Second law of thermodynamics	Chapter 13	Quiz 6
	FINAL EXAM: 12 December, 7 – 10 pm. Location TBA.			