Course	**CHEM 1311: General Chemistry I**
Professor	Amandeep Sra Ph.D.
Term	Spring 2014
Meetings	Section 001: MWF 10:00 am – 10:50 am, SLC 2.303

Professor's Contact Information

Office Phone	972-883-4818
Office Location	SLC 3.403
Email Address	aks057000@utdallas.edu
Office Hours	M / W / F 11-12 pm and M / W 1-2 pm PLEASE feel free to stop by when I am in my office
Other Information	Best way to contact me: email listed above or stop by my office; I don't read eLearning email

General Course Information

Pre-requisites, Co-requisites, & other restrictions	One year of high school chemistry is assumed.
Course Description	Introduction to elementary concepts of chemistry theory. The course emphasizes molecular structure and bonding, chemical reactions, and the mole concept and its applications.
Learning Outcomes	*Objectives* This course is the first of a two-course sequence. The goal is to provide students with a working knowledge of the basic concepts of general chemistry needed for creative problem solving, as well as a background for advance chemistry and related science courses, and for laboratory applications. The course focuses on the following: the architecture of the atom; molecular structure and bonding; chemical reactions; thermochemistry; the mole concept and its applications; and the properties of solids, liquids and gases. Basic problem solving skills and critical thinking are also emphasized. *Expected Learning Outcomes* Upon successful completion of this course, students will therefore: 1) be able to use basic concepts in quantum theory and chemical bonding theory by predicting both the chemical properties (e.g. periodic trends, reactivities) and the electronic and 3-dimensional structures of representative compounds 2) be able to interpret experimental data (in both tabular and graphical form) by appropriately setting up and solving scientific problems using dimensional analysis with proper attention to scientific units and significant figures 3) be able to demonstrate an understanding of the role of energy in physical changes and chemical reactions by predicting the direction and magnitude of energy changes and by performing thermochemical calculations 4) be able to demonstrate an understanding of the properties of gases by applying the gas laws and kinetic molecular theory to processes involving gases
Required Texts & Materials	1. Textbook: *Chemistry: Atoms First, 1st Edition* (Julia Burdge, Jason Overby); McGraw-Hill 2. course materials located on class site at eLearning: http://elearning.utdallas.edu/ 3. CONNECT online assignment system: http://connect.mcgraw-hill.com

Schedule & Academic Calendar

Class Period	Day	Date	Topic	Chapter
1	Mon	Jan 13	Introduction: Syllabus	
2	Wed	Jan 15	Atoms and the Periodic Table:	2
3	Fri	Jan 17	atomic theory; structure of the atom; atomic number; mass	
	Mon	**Jan 20**	***MLK Day (no classes)***	
4	Wed	Jan 22	number; isotopes; average atomic mass; mole and molar mass	2 (cont.)
5	Fri	Jan 24	Quantum Theory and Electronic Structure of Atoms:	3
6	Mon	Jan 27	energy; light; atomic line spectra; Bohr model; quantum mechanics;	
7	Wed	Jan 29	quantum numbers; atomic orbitals; electron configurations; periodic	
8	Fri	Jan 31	table	
9	Mon	Feb 3	Periodic Trends of the Elements:	4
10	Wed	Feb 5	effective nuclear charge; periodic trends—atomic radius, ionization	
11	Fri	Feb 7	energy, electron affinity; electron configuration of ions; ionic radius	
12	Mon	Feb 10		
	Tue	**Feb 11**	**Exam 1 (Chapters 1, 2, 3 & 4)**	
13	Wed	Feb 12	Ionic and Covalent Compounds:	5
14	Fri	Feb 14	Lewis dot symbols; ionic bonding; covalent bonding; molecular and	
15	Mon	Feb 17	structural formulas; empirical formulas; nomenclature; molecular and	
16	Wed	Feb 19	formula masses; % composition; molar masses; determination of empirical and molecular formulas	
17	Fri	Feb 21	Representing Molecules:	6
18	Mon	Feb 24	octet rule; electronegativity and polarity; Lewis structures and formal	
19	Wed	Feb 26	charges; resonance; octet rule exceptions	
20	Fri	Feb 28		
21	Mon	Mar 3	Molecular Geometry & Bonding Theories: VSEPR theory	7 (excluding 7.6)
	Tue	**Mar 4**	**Exam 2 (Chapters 5, 6, part 7)**	
22	Wed	Mar 5	molecular geometry and polarity; valence bond theory;	7 (cont.)
23	Fri	Mar 7	hybridization;	
	Mon-Fri	**Mar 10-15**	**Spring Break (no classes)**	
24	Mon	Mar 17	sigma and pi bonding	7 (cont.)
25	Wed	Mar 19	Chemical Reactions:	8
26	Fri	Mar 21	chemical equations; stoichiometry; limiting reactants; percent yield	
27	Mon	Mar 24		
28	Wed	Mar 26		
29	Fri	Mar 28	Chemical Reactions in Aqueous Solutions:	9
30	Mon	Mar 31	strong and weak electrolytes; precipitation reactions; acid-base	
31	Wed	Apr 2	reactions; oxidation-reduction reactions; concentration units and	
32	Fri	Apr 4	titrations	
33	Mon	Apr 7		
	Tue	**Apr 8**	**Exam 3 (Chapters 7, 8 & 9)**	
34	Wed	Apr 9	Energy Changes in Chemical Reactions:	10
35	Fri	Apr 11	energy/energy changes; thermodynamics; enthalpy; calorimetry;	
36	Mon	Apr 14	Hess's Law; standard enthalpies of formation;	
37	Wed	Apr 16	bond enthalpies; lattice energy	
38	Fri	Apr 18	Gases:	11
39	Mon	Apr 21	properties of gases; kinetic molecular theory; pressure; gas laws;	
40	Wed	Apr 23	ideal gas equation; real gases; Dalton's law of partial pressures and	
41	Fri	Apr 25	mole fractions; reactions with gases	
42	Mon	Apr 28	Intermolecular Forces and the Physical Properties of Liquids and Solids: intermolecular forces; properties of liquids; crystal structure;	12
	Tue	**Apr 29**	**Exam 4 (Chapters 10, 11 and part 12)**	
43	Wed	Apr 30	types of solids; phase changes; phase diagrams	12 (cont.)
44	Fri	May 2		
	Mon	**May 5**	***Reading Day***	
			Cumulative Final Exam (8:00 to 10:45pm)	

Exam Schedule:	**Tue**	**Feb 11**	**Exam 1**	**7:00 to 8:15pm**
	Tue	**Mar 4**	**Exam 2**	**7:00 to 8:15pm**
	Tue	**Apr 8**	**Exam 3**	**7:00 to 8:15pm**
	Tue	**Apr 29**	**Exam 4**	**7:00 to 8:15pm**
			Final Exam	**(NOT YET ANNOUNCED)**

Course Policies

Grading (credit) Criteria

Course Evaluation:

(i) Online Quizzes	8%
(ii) LS online assignment	2 %
(iii) In-class Assignments	5%
(iv) Midterm Exams (4 x 16.25%)	65%
(v) Final Exam	20%

Our goal in this class is to help you develop an understanding (and appreciation) of how chemistry impacts your everyday lives. Our main focus will be on CONCEPTS and not just FACTS, and our teaching and testing will reflect this. A principle method for learning a concept is by working problems that test your understanding of that concept and how it relates to other concepts you already know. This course is designed to empower you to succeed in learning chemical concepts. Important components of the course are as follows:

0. Homework assignments (end of chapter problems):

- assigned for each chapter from end-of-chapter exercises in your textbook
- large number of problems selected to cover majority of important concepts
- *these will not be collected or graded*
- all homework assignments are posted on elearning

1. ONLINE Quizzes (in CONNECT):

- approx. 10-12 quizzes during the semester
- I will drop your lowest quiz score; the others will be averaged together to give your quiz average
- ***there will be no makeup quizzes given*** *(you will receive a "zero" for any quiz you miss)*
- for additional details, see "CONNECT details" section below

2. Learn Smart (LS) ONLINE Assignments:

- helps a student gauge their fundamental knowledge and identify what they don't understand
- approximately one per chapter covered in the textbook
- typically 30 to 60 minutes long
- number of questions vary based on strength of a student's understanding
- questions tend to have a more conceptual focus
- scores will be averaged together to give your LearnSmart assignment average
- ***there will be no makeup LearnSmart assignments given*** *(you will receive a* "zero" for any you miss)
- for additional details, see —CONNECT detail in the section below

3. In-class Assignments:

- approximately one in-class assignment each week (or as needed)
- these will be unannounced, and can occur anytime during any lecture
- typically short (1 or 2 questions) on material seen within last 1 or 2 lectures
- we will drop your lowest in-class assignment score; the others will be averaged together to give your in-class assignment average
- ***there will be no makeup in-class assignments given*** *(you will receive a "zero" for any you miss)*

4. Midterm exams (scantron-based multiple choice exams):

- each exam is 80 minutes long, including scantron bubbling time
- ALL 4 MIDTERM EXAMS MUST BE TAKEN, at the scheduled time and on the scheduled day
- ***There will be no makeup exams given***
- The lowest of the 4 exam scores will be automatically replaced by a higher final exam score. If you have an ***acceptable, documented reason*** for missing an exam (e.g., documented illness, auto accident, participation in UTD-sponsored event, observance of religious holiday), you will be allowed to replace the missed exam with your score on the final. Otherwise, you will receive a "zero" for that exam, that zero will not be replaced by the final, and will be included in the calculation of your final class grade

	• You may arrive late for an exam ***until the time when the first student finishes and leaves*** (only penalty being that you will have proportionally less time to finish the exam). After this grace period you will not be allowed to take the exam and will receive a score of "zero" • questions will focus on concepts and material covered in class, homework, pre-quizzes, in-class assignments and quizzes • you will not be allowed to leave the exam room for the first 30 minutes of the exam. **5. Final exam (scantron-based multiple choice exam):** • comprehensive exam • the final exam is 2 hours and 45 minutes long • The final exam must be taken and cannot be replaced by any other grade • ***No makeup final will be given***. ***NOTE THE DAY AND TIME OF THE FINAL!***
Make-up Exams	There are **no make-up exams** (see above).
Extra Credit	There is **no extra credit**.
Class Attendance	Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. Absences may lower a student's grade where class attendance and class participation are deemed essential by the instructor. In some courses, instructors may have special attendance requirements (see "3. In-class Assignments:" in the Course Evaluation section above); these should be made known to students during the first week of classes.
CONNECT details	**What:** McGraw-Hill's CONNECT is an electronic assignment system that we will be using for online quiz and Learn Smart assignments. **Where:** Go to http://connect.mcgraw-hill.com **First-time Registration/Create a New Account/Enrolling for Course:** • procedure outlined in document "CONNECT Overview.ppt" (eLearning course site) • BE SURE TO USE THE CORRECT WEB ADDRESS: http://connect.mcgraw-hill.com/class/a_sra_001_s14 • when registering, be sure to use your university name as it appears for the registrars office and grade book. Failure to do so will result in you possibly not receiving credit for work you do. This is the student's responsibility. **CONNECT assignment formats:** **ONLINE QUIZ Assignment format / details:** • quizzes will be posted in a timely manner, and the quizzes will be due (i.e. access closed) on the Saturday at 11.30pm. • *you will be given only 3 attempts for each problem.* You can click on the check my answer and it will prompt if the answer is correct or wrong. At the end of three attempts, you will not be able to make any changes to the answer and you will move on to the next question. • quizzes will not be timed. Be sure to submit your work when finished. At the end of the available attempts, entered answers on the quiz will be collected automatically by the CONNECT system and graded. *There will be no excuses accepted for unfinished quizzes.* **LearnSmart Assignment format / details:** • number of questions (and thus the length of time per assignment) vary • each student will get a unique set of questions tailored by the system to suit the student's preparation and understanding of the material

	• can take it anywhere (e.g., home, etc • ***strongly suggested*** that you work independently so that the system can give you accurate feedback on your level of understanding of the topics
Exam/Final Exam Details	• Students will be assigned to specific exam rooms based on their last name. Assignments will be announced before the first midterm exam, and will be valid for the full semester. • you will need your valid UTD ID to take the exam; in the absence of this, a valid, current photo ID such as your driver's license can be used • during exams, students are not allowed to have the following items with them: food or drink, scratch paper (unless provided by the instructor), course materials, textbooks, notes (including formula sheets), or electronic devices, including iPads, iPhones or any other type of smart phone or cellular phone, iPods, MP3 players, earphones, radios, cameras, multi-functional timepieces, or computers. • when possible, students will sit in alternating seats, face forward at all times, and remove any clothing which might conceal eye movements, reflect images of another's work, or hide course materials for copying. • exam proctors will monitor any communication or signaling between students by talking, whispering or making sounds, or by using your hands, feet, or other body movements, the test paper itself or your writing implement. • Specific calculators (listed below) **required for use on all exams** (you will provide your own calculator for exams). TI-30X IIS (solar) or TI-30X IIB (battery) or TI-30XA -- same calculator required for SAT and ACT exams -- inexpensive sources ($10 to $20): Walmart, Amazon.com • Non-approved calculators will be confiscated by the instructor. ***Use of a non-approved calculator will be considered an act of scholastic dishonesty and will be dealt with appropriately (see Section "Academic Integrity" below).*** • you will not be allowed to leave the exam room for the first 30 minutes of the exam.
Peer Instructional Support **(PLTL Program)**	Peer Led Team Learning (PLTL) is a program designed to provide an active learning experience in which students can gain the skills and confidence to be successful learners in General Chemistry and other science courses. In weekly ninety-minute PLTL sessions, small groups of students will work together to solve problems written by the course professors. An undergraduate PLTL leader who has training in group dynamics and mastery of course content will lead them. This is an optional component to the course. However, if you choose to participate, you are required to stay in the program throughout the semester—the integrity of the group depends on it. **It is critical to attend every session**—skipping a PLTL session limits the utility of that session for everybody else. We want people who sign up for the program to be fully committed to attending. ***You are allowed only 2 absences during the whole semester; students in the PLTL program that miss more than 2 PLTL sessions will not be allowed to drop their lowest quiz grade. Bottom line: only sign up for PLTL if you are committed to attending every session.*** To participate in a PLTL group, you will need to apply online. More details of this program, and the enrollment procedure, will be announced in class. You can learn more about PLTL at the following link for the Student Success Center: http://www.utdallas.edu/GEMS/

Other Assistance	We have many other forms of help available to you in this class: • Chemistry TA office hours -- hours will be set in near future and posted on elearning -- available for walk-in assistance • Chemistry Tutors provided by Student Success Center -- hours will be set in near future and posted online at Success Center website -- available for walk-in assistance In short: with an instructor, an army of Chemistry TAs, Chemistry Tutors, and PLTL, there should be NO STUDENT that cannot find help. Our goal is to put the resources in place to help every student that wants to succeed in a position where they can do so!
Regrade Policy	Requests to have 1 or more questions of a quiz/in-class assignment/exam regraded have to be made within 1 week of receiving the graded assignment. The request should be in the form of an email from your UTD email account to the instructor; the subject line should read "quiz X regrade", "in-class assignment regrade" or "exam X regrade", where X is the assignment number; the body of the email should contain your full name, the problem number and an explanation of how the problem was graded incorrectly
UT Dallas Syllabus Policies and Procedures	The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus: http://go.utdallas.edu/syllabus-policies Policies covered include: student conduct and discipline, academic integrity, copyright notice, email use, student grievance procedures, and religious holidays. Some additional information regarding some of these topics is included in related sections below.
Academic Integrity	The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. *Scholastic Dishonesty*: Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, submitting for credit any work or materials that are attributable in whole or in part to another person, taking an examination for another person, or any act designed to give unfair advantage to a student or the attempt to commit such acts.
Email Use	Our policy in this class is to ***not*** communicate any details regarding your grade through email. We will only discuss these details in person with a student.
Technical Support	If you experience any problems with your UTD account, you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.
Withdrawal from Class	The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled. ***Undergraduates last day to drop without a "W": Wednesday Jan 29*** ***Undergraduates last day to withdraw with WL: Friday, March 28***
Incomplete Grades	As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.
Disability Services	It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for a course, please

	discuss it with an OSA staff member and allow at least one week's advanced notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion. The primary functions of the Office of Student AccessAbility are to provide: 1. academic accommodations for students with a documented permanent physical, mental or sensory disability 2. non-academic accommodations 3. resource and referral information and advocacy support as necessary and appropriate. OSA is located in the Student Services Building, suite 3.200. They can be reached by phone at (972) 883-2098, or by email at disabilityservice@utdallas.edu.

These descriptions and timelines are subject to change at the discretion of the Professor.