



Course	CHEM 1311: General Chemistry I
Professor	Dr. Amandeep Sra
Term	Summer 2016
Time	MWF 1:00 pm – 2.15 pm, SLC 2.303

Professor's Contact Information

Office Phone	972-883-4818
Office Location	SLC 3.513
Email Address	aks057000@utdallas.edu
Office Hours	Monday / Wednesday 2:15 pm - 3:15 pm. <u>Friday office hours are workshop in SLC 2.302 Time: 2.30 - 4.00 pm</u> PLEASE feel free to stop by when I am in my office. I have an open door policy.
Online Office Hours	Sunday evening office hours will be held online on blackboard 9:00 -10:00 pm Go to elearning and click on Course page. Click on online office hours. You will be required to download Blackboard Collaborate Launcher.
Other Information	Best way to contact me: email listed above or stop by my office; I don't read eLearning emails
TA information	Charles Holt cjh130430@utdallas.edu
TA office hours	M 12:00 -1:00 pm outside my office "LCC" sessions: "Learn Chemistry with Charles" W 3:00 - 4:00 pm

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	<u>Objectives</u> 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. <u>Expected Learning Outcomes</u> Upon successful completion of this course, students will therefore: <ol style="list-style-type: none">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 compounds2) 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

	<p>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</p> <p>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</p>
Required Texts & Materials	<p>1. Textbook: <i>Chemistry: Atoms First, 2nd Edition</i> (Julia Burdge, Jason Overby); McGraw-Hill</p> <p>2. Course materials located on class site at eLearning: http://elearning.utdallas.edu/</p> <p>3. ALEKS online assignment system: www.aleks.com</p> <p>4. Only three types of calculators are allowed during exams. TI-30 XIIS, TI-30 XIIB and TI-30 XA</p>

Schedule & Academic Calendar

Class Period	Day	Date	Events	Topic	Chapter
1	Mon	May 23		Introduction: Syllabus	
2	Wed	May 25		Atoms and the Periodic Table: atomic theory; structure of the atom; atomic number; mass number; isotopes; average atomic mass; mole and molar mass	2
3	Fri	May 27			
	Mon	May 30	Quiz 1		
4	Wed	June 1		Quantum Theory and Electronic Structure of Atoms: energy; light; atomic line spectra; Bohr model; quantum mechanics; quantum numbers; atomic orbitals; electron configurations; periodic table	3
5	Fri	June 3			
6	Mon	June 6	Quiz 2		
7	Wed	June 8			
8	Fri	June 10		Periodic Trends of the Elements: effective nuclear charge; periodic trends—atomic radius, ionization energy, electron affinity; electron configuration of ions; ionic radius	4
9	Mon	June 13	Exam 1		
10	Wed	June 15			
11	Fri	June 17		Ionic and Covalent Compounds: Lewis dot symbols; ionic bonding; covalent bonding; molecular and structural formulas; empirical formulas; nomenclature; molecular and formula masses; % composition; molar masses; determination of empirical and molecular formulas	5
12	Mon	June 20	Quiz 3		
13	Wed	June 22			
14	Fri	June 24		Representing Molecules: Octet rule; electronegativity and polarity; Lewis structures and formal charges; resonance; octet rule exceptions	6
15	Mon	June 27	Exam 2		
16	Wed	June 29			
17	Fri	July1		Molecular Geometry, IM Forces & Bonding Theories: VSEPR theory, molecular geometry and polarity; No Classes (Assessment in ALEKS)	7 (excluding 7.6)
	Mon	July4	ALEKS		
18	Wed	July 6			
19	Fri	July 8		IM forces, valence bond theory; hybridization; sigma and pi bonding	8
20	Mon	July 11	Exam 3	Chemical Reactions: Chemical equations; stoichiometry, limiting reactants; percent yield	
21	Wed	July 13			
22	Fri	July 15			
23	Mon	July 18	Quiz 4	Chemical Reactions in Aqueous Solutions: Strong and weak electrolytes; precipitation reactions; acid-base reactions; oxidation-reduction reactions; pH; concentration units and titrations	9
24	Wed	July 20			
25	Fri	July 22			
26	Mon	July 25	Quiz 5	Energy Changes in Chemical Reactions: energy/energy changes; thermodynamics; enthalpy; calorimetry; Hess's Law; standard enthalpies of formation; bond enthalpies; lattice energy	10
27	Wed	July 27			
28	Fri	July 29			
29	Mon	Aug 1	Exam 4	Gases: properties of gases; kinetic molecular theory; pressure; gas laws; ideal gas equation; real gases; Dalton's law of partial pressures and mole fractions; reactions with gases	11
30	Wed	Aug 3			
31	Fri	Aug 5			
32	Mon	Aug 8		Physical Properties of Liquids and Solids: properties of liquids and solids; phase changes; phase diagrams	12

Exam Schedule:

Mon	Jun 6	Exam 1	4.30 pm to 6.00 pm	SLC 2.303
Mon	June 27	Exam 2	4.30 pm to 6.00 pm	SLC 2.303
Mon	Jul 11	Exam 3	4.30 pm to 6.00 pm	SLC 2.303
Mon	Aug 1	Exam 4	4.30 pm to 6.00 pm	SLC 2.303
Wed	Aug 10	Final Exam (Comprehensive)	11.00 am to 1.45 pm	SLC 1.102

Course Policies

<p style="text-align: center;">Grading (credit) Criteria</p>	<p>Course Evaluation:</p> <table border="0"> <tr> <td>(i) In-class quizzes + assignments</td> <td>5% + 5 % = 10%</td> </tr> <tr> <td>(ii) ALEKS Assignments</td> <td>10%</td> </tr> <tr> <td>(iii) Midterm Exams (4 x 15%)</td> <td>60%</td> </tr> <tr> <td>(iv) Final Exam</td> <td>20%</td> </tr> </table> <p>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. We have designed this course to empower you to succeed in learning chemical concepts. We have a number of “resources” that we are putting at your disposal to enable you to succeed. While students will differ in the type of resources they prefer to utilize, in our experience we have identified a subset that are critical. Thus for those, we give credit in the class to strongly encourage students to use them. Resources are described below and in the following sections:</p> <p><u>0. Homework assignments (end of chapter problems):</u></p> <ul style="list-style-type: none"> • a principle method for assessing whether you understand a concept and how to use it • one of the most critical resources for preparing for exams • assigned for each chapter from end-of-chapter exercises in your textbook • large number of problems selected to cover the majority of important concepts • mixture of conceptual and quantitative problems • these will not be collected or graded • all homework assignments are posted on eLearning <p><u>1. In-class quizzes and assignments:</u></p> <ul style="list-style-type: none"> • There will be a total of 5 in class quizzes worth 5% of your total grade. • No quiz grade will be dropped and there will be <i>no makeup quizzes given</i> (<i>you will receive a “zero” for any you miss</i>) • In Class assignments are for attendance and they will be worth additional 5% of your grade. • these will be unannounced, and can occur anytime during any lecture • any student leaving the lecture after the quiz will automatically get a “zero” for that day’s quiz • obvious message: attending class each and every day is arguably the MOST important thing a successful general chemistry student does <p><u>2. ALEKS:</u></p> <ul style="list-style-type: none"> • helps a student gauge their fundamental knowledge and identify what they don’t understand • details for ALEKS provided in separate document • each student will get a unique set of questions tailored by the system to suit the student’s preparation and understanding of the material • ALEKS will constitute 10% of your course score, broken down as follows: <ul style="list-style-type: none"> -- Completion Goals, 10 of 11 objectives (Objectives 1 – 11), 6% -- Overall course mastery – 160 topics mastery, 4% <p><u>3. Midterm exams (scantron-based multiple choice exams):</u></p> <ul style="list-style-type: none"> • each exam is 80 minutes long • ALL 4 MIDTERM EXAMS MUST BE TAKEN, at the scheduled time and on the scheduled day • <i>There will be no makeup exams given</i> • The lowest of the 4 exam scores will be automatically replaced by a higher final exam score. If you have an <i>acceptable, documented reason</i> for missing an exam (examples include: documented illness, auto accident, participation in UTD-sponsored event, observance of religious holiday), you will be allowed to replace the missed exam with your 	(i) In-class quizzes + assignments	5% + 5 % = 10%	(ii) ALEKS Assignments	10%	(iii) Midterm Exams (4 x 15%)	60%	(iv) Final Exam	20%
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	<p>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</p> <ul style="list-style-type: none"> • You may arrive late for an exam <i>until the time when the first student finishes and leaves</i> (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, prequizzes, in-class assignments and quizzes <p><u>4. Final exam (scantron-based multiple choice exam):</u></p> <ul style="list-style-type: none"> • 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 • <i>No makeup final will be given. NOTE THE DAY AND TIME OF THE FINAL!</i>
Exam/Final Exam Details	<ul style="list-style-type: none"> • 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, google glasses, 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). <ul style="list-style-type: none"> TI-30X IIS (solar) or TI-30X IIB (battery) or TI-30XA <ul style="list-style-type: none"> - same calculator required for SAT and ACT exams - inexpensive sources (\$10 to \$20): Walmart, Amazon.com • <u>Non-approved calculators will be confiscated by the instructor.</u> <i>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).</i> • ALL calculators will be checked before/during the exam. Non-approved calculators will be removed immediately from the student, to be returned at some point after the exam period (possibly in class) • If your calculator is removed, you will be required to finish the exam WITHOUT a calculator (i.e., we do not have calculators to provide, and another student cannot provide you with a calculator once the exam has started)
ALEKS deadlines	<p>Objectives are <i>due 6:00 am on the days listed below (typically a Monday)</i> — at the deadline time, these objectives will close — you will no longer be able to work on them for a grade. Only the first objective is due at 6:00 pm on Monday. You are welcome to use your two "Open Up Coupons" (handed on first day of class) to get extensions on any two ALEKS assignments</p>

	Dates	Objectives
	05/17/2016 12:01 AM - 05/30/2016 06:00 PM	1. Objective #1 (20 topics)
	05/30/2016 06:00 PM - 06/06/2016 06:00 AM	2. Objective #2 (8 topics)
	06/06/2016 06:00 AM - 06/13/2016 06:00 AM	3. Objective #3 (16 topics)
	06/13/2016 06:00 AM - 06/20/2016 06:00 AM	4. Objective #4 (18 topics)
	06/20/2016 06:00 AM - 06/27/2016 06:00 AM	5. Objective #5 (17 topics)
	06/27/2016 06:00 AM - 07/04/2016 06:00 AM	6. Objective #6 (11 topics)
	An assessment will be triggered upon completion of objective # 6	
	07/04/2016 06:00 AM - 07/11/2016 06:00 AM	7. Objective #7 (11 topics)
	07/11/2016 06:00 AM - 07/18/2016 06:00 AM	8. Objective #8 (10 topics)
	07/18/2016 06:00 AM - 07/25/2016 06:00 AM	9. Objective #9 (20 topics)
	07/25/2016 06:00 AM - 08/01/2016 06:00 AM	10. Objective #10 (10 topics)
	08/01/2016 06:00 AM - 08/08/2016 06:00 AM	11. Objective #11 (19 topics)
Make-up Exams	There are no make-up exams (see above).	
Extra Credit	There is no extra credit .	
Class Attendance	Your attendance is CRITICAL for your ultimate performance in this class. Results from Fall 2006 support this statement: students that missed just 4 of the first 21 lectures ended up with D's, F's or withdrew from the course. Bottom line: DO NOT SKIP CLASS. We will be doing several in-class assignments and these will be collected and completion points will count as attendance points.	
Regrade Policy	Requests to have 1 or more questions of a prequiz/quiz/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 "prequiz X regrade", "quiz X 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	
Other Assistance	<p>We have many other resources available to you in this class:</p> <p>Instructor run workshop -- Every Friday from 2:30 to 4:00 pm in SLC 2.302</p> <p>Chemistry TA office hours -- hours will be set in near future and posted online at elearning website -- available for walk-in assistance</p>	

	<p>Chemistry Tutors provided by Student Success Center -- hours will be set in near future and posted online at Success Center website http://www.utdallas.edu/studentsuccess/leader/tutors.html -- available for walk-in assistance</p>
Student Conduct and Discipline	<p>The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, <i>A to Z Guide</i>, which is provided to all registered students each academic year.</p> <p>The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the <i>Rules and Regulations, Series 50000, Board of Regents, The University of Texas System</i>, and in Title V, Rules on Student Services and Activities of the university's <i>Handbook of Operating Procedures</i>. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391) and online at:</p> <p>http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html</p> <p>A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.</p>
Academic Integrity	<p>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.</p> <p>Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.</p> <p>Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.</p>
Copyright Notice	<p>The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provide by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UTD student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see:</p> <p>http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm</p>
Email Use	<p>The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's UTD email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and</p>

	<p>the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at UTD provides a method for students to have their UTD mail forwarded to other accounts.</p> <p><i>Our policy is to not communicate any details regarding your grade through email. We will only discuss these details in person with a student.</i></p>
Technical Support	<p>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.</p>
Withdrawal from Class	<p>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.</p> <p>Undergraduates last day to drop a class without a "W" = Thursday, June 2, 2016 Undergraduates last day to withdraw without a "WL" = Monday, July 11, 2016</p>
Student Grievance Procedures	<p>Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's <i>Handbook of Operating Procedures</i>.</p> <p>In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.</p> <p>Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.</p>
Incomplete Grades	<p>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 <u>F</u>.</p>
Office of Student AccessAbility (OSA)	<p>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.</p> <p>The primary functions of the Office of Student AccessAbility are to provide:</p>

	<p>1. academic accommodations for students with a documented permanent physical, mental or sensory disability</p> <p>2. non-academic accommodations</p> <p>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: disabilityservice@utdallas.edu</p>
Religious Holy Days	<p>The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.</p> <p>The Student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.</p> <p>If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.</p>

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