

Course	CHEM 1312: General Chemistry II
Professors	Lev D. Gelb
Term	Fall 2010
Meetings	MWF 1:30 pm – 2:20 pm, MSET1.102

Professor's Contact Information

Office Phone	972-883-5644
Office Location	ECS-S 4.607
Email Address	lev.gelb@utdallas.edu
Mailboxes	Chemistry Department Main Office, and outside office door (preferred).
Office Hours	Tues 3:00 to 4:00 pm; Wed 11:00 am to 12:00 pm. Feel free to stop by at other times!
Other Information	Use email address above, I don't read eLearning email.

General Course Information

Prerequisites, Co-	One year of high school chemistry and one semester of college general chemistry		
requisites, and	(e.g. CHEM 1311) are assumed. You must also register for CHEM 1014 (exams), and		
other restrictions	CHEM 1112 (General Chemistry Lab II)		
Course Description	A continuation of CHEM 1311 treating solutions; chemical equilibrium, acids and bases, solubility; electrochemistry; organic chemistry; rates of reactions; and environmental, polymer, nuclear, and biochemistry.		
	<u>Objectives</u> CHEM 1312 is the second of a two-course sequence. The goal of this course is to provide students with a working knowledge of how the basic concepts learned in CHEM 1311 apply to more complex chemical systems. The course focuses on the following: chemical equilibrium; rates of reactions; acid base chemistry, including buffer systems and acid/base titrations; electrochemistry; thermodynamics; nuclear chemistry; and basic organic chemistry. Basic problem solving skills and critical thinking continue to be emphasized in this course.		
	<u>Expected Learning Outcomes</u> Upon successful completion of this course, students will therefore:		
	 be able to predict and apply the characteristics and colligative properties of solutions, based on their understanding of intermolecular attractive forces that determine the properties of the states of matter and phase behavior 		
Learning Outcomes	 be able to use the basic concept of equilibrium in writing equilibrium constant relationships, determining whether equilibrium has been established, calculating equilibrium concentrations, and predicting the effects of concentration, pressure and temperature changes on equilibrium mixtures (Le Chatelier's Principle) 		
	 be able to interpret experimental data (in both tabular and graphical form) by appropriately setting up and solving scientific problems using dimensional analysis and with proper attention to scientific units and significant figures 		
	4. be able to apply the concepts of equilibrium to (a) understand common inorganic reactions that occur in aqueous solutions (e.g. acid-base, solubility-precipitation and oxidation/reduction reactions); (b) understand how chemical equilibria depend on ΔH, ΔS and ΔG; and (c) determine standard and non-standard cell potentials and equilibrium constants from cell potential data for oxidation/reduction reactions		
	5. be able to demonstrate an understanding of the basic concepts of chemical kinetics, how reaction rates and equilibrium properties are related, and how these topics relate to major scientific issues by performing kinetics calculations and evaluating reaction mechanisms		
	1. Textbook: Chemistry, 1st Edition (Julia Burdge); McGraw-Hill		
Required Texts & Materials	2. Course materials located on class site at eLearning: http://elearning.utdallas.edu/		
	3. ARIS online assignment system: http://www.mharis.com		

Schedule & Academic Calendar

Class Period	Day	Date	Торіс	Chapter
1	Fri	Aug 20	Welcome and introduction	
2	Mon	Aug 23	Solutions: heats of solutions, concentrations,	13
3	Wed	Aug 25	temperature and pressure effects on solubility,	
4	Fri	Aug 27	vapor pressure,	
5	Mon	Aug 30	colligative properties: boiling pt. elevation,	
6	Wed	Sept 1	freezing pt. depression, osmosis	
7	Fri	Sept 3	Kinetics: factors affecting reaction rates	14
	Mon	Sept 6	Labor Day, no class	
8	Wed	Sept 8	concentration vs. rate, concentration vs. time,	
9	Fri	Sept 10	reaction rate theories/activation energies,	
10	Mon	Sept 13	mechanisms; catalysis	
11	Wed	Sept 15	Equilibrium: the concept and the equilibrium constant,	15
	Wed	Sept 15	Exam 1 (Chapters 13 and 14)	1
12	Fri	Sept 17	equilibrium expressions,	15 (cont.)
13	Mon	Sept 20	applications	
14	Wed	Sept 22	factors that affect equilibrium	
15	Fri	Sept 24	Acids and bases:	16
16	Mon	Sept 27	Brønsted acids/bases, the pH scale,	
17	Wed	Sept 29	strong/weak acids and bases,	
18	Fri	Oct 1	conjugate acid/base pairs,	
19	Mon	Oct 4	molecular structure and acid strength, acidic/basic saits,	
20	Wed	Oct 6		
	Wed	Oct 6	Exam 2 (Chapters 15 and 16)	
21	Fri	Oct 8	Acid/base equilibria and solubility equilibria:	17
22	Mon	Oct 11	common ion effect,	
23	Wed	Oct 13	DUITER SOlUTIONS,	
24	Fri	Oct 15	acid/base titrations,	
25	Mon	Oct 18	factors affecting solubility	
26	Wed	Oct 20		40
27	Fri	Oct 22	Entropy, free energy and equilibrium:	18
28	IVION	Oct 25	Cibbo' free energy	
29	vved	Oct 27	free energy,	
30	Fri	Oct 29		
31	IVION Wod	Nov 1	Electrophomiotru:	10
32	Wed	Nov 3	Electrochemistry:	19
22	Fri	Nov 5	blancing redex reactions	10 (cont.)
33	Mon	Nov 9	dalancing redox reactions,	19 (cont.)
25		Nov 10	cell potentials and reduction potentials	
30	Fri	Nov 12	cell potentials and free energy changes	
37	Mon	Nov 12	batteries and electrolvsis.	
38	Wed	Nov 17	stoichiometry of electrochemical reactions	
39	Fri	Nov 19	Nuclear chemistry:	20
40	Mon	Nov 22	nuclear reactions, nuclear stability	20
41	Wed	Nov 24	fission and fusion	
	Fri	Nov 26	Thanksaiving no class	1
42	Mon	Nov 29	Organic chemistry	10
43	Wed	Dec 1	organic chemistry	10
	Wed	Dec 3	Exam 4 (Chapters 19 and 20)	
44	Fri	Dec 3		10 (cont'd)
45	Mon	Dec 6		
	Tues/Wed	Dec 7-8	Reading Days	
	Fri	Dec 10	Cumulative Final Exam (11:00 AM to 1:45 PM)	
Exam Schedule:	Wed	Sept 1	5 Exam 1 7:00 to 8:30pm	
	Wed	Oct 6	Exam 2 7:00 to 8:30pm	
	Wed	Nov 3	Exam 3 7:00 to 8:30pm	
	Wed	Dec 3	Exam 4 7:00 to 8:30pm	
	FRID	DAY DEC. 1	IO FINAL EXAM 11:00 AM to 1:45 PM	

Course Policies

	Course Evaluation:(i) Quizzes15%(ii) Midterm Exams (4 x 15%)60%(iii) Singl Event25%
	(III) Final Exam 25%
	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. We have designed this course to empower you to succeed in learning chemical concepts. Important components of the course are as follows:
	 1. Homework assignments: assigned for each chapter from end-of-chapter exercises in <i>Burdge</i> large number of problems, selected to cover majority of important concepts not be collected or graded all homework assignments for the next section will be posted the day after the previous exam
	2 Quizzes (online in APIS):
	 one per chapter plus additional "Foundation Concepts" quizzes we will drop your 2 lowest quiz scores; 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)
	 each quiz will be composed of two parts: a. pre-quiz:
	approx. 5 to 10 questions (similar to homework)
Grading (credit) Criteria	can take as many times as you want (top score counts)
	can take it anywhere you wish can work together, use notes and textbook
	b. proctored quiz:
	typically 3 to 5 questions
	worth 75% of quiz score
	only take once
	must take independently (no working together, textbook or notes) at the Success Center (Conference Center, CN building)
	• all quizzes for the next section will be posted the day after the previous exam,
	and the quizzes will be due (i.e. access closed) on the dates listed below.
	There are 150+ students in this class, and ALL of you will be required to take the proctored quizzes at the Success Center (40 computers). Den't
	wait until the last day before the due date to try to take your guizzes —
	there will be no excuses accepted for unfinished quizzes
	 you are required to take the proctored quizzes at the Success Center, and software on these computers track student access and usage to allow up to
	ensure this. Any attempt by a student to take the proctored guiz at a
	different location will be considered an act of scholastic dishonesty and
	will be dealt with appropriately (see Section "Academic Integrity" on a
	tonowing page).
	4. Midterm exams (scantron-based multiple choice):
	 ALL 4 MIDTERM EXAMS MUST BE TAKEN, at the scheduled time and on the ask adulad day.
	scneaulea aay • There will be no makeup exams given
	• The lowest of the 4 exam scores will be automatically replaced by a higher final

	exam sc exam (e. sponsore replace t receive a will be in • You may arri (the only exam). will recei • questions will quizzes 5. Final exam (scantro • comprehensiv • The final exam don't mis • No makeup	ore. If you have an acce , g., documented illness, a ed event, observance of he missed exam with you a "zero" for that exam; that cluded in the calculation ve late for an exam up u penalty being that you v After this grace period you ve a score of "zero." focus on concepts and u and quizzes. on-based multiple choin we exam m must be taken and ca as it final will be given. NOT	ptable, documented reason for missing an auto accident, participation in UTD- religious holiday), you will be allowed to ur score on the final. Otherwise, you will at zero will not be replaced by the final and of your final class grade. until the first student finishes and leaves vill have proportionally less time to finish the ou will not be allowed to take the exam and material covered in class, homework, pre- ce): nnot be replaced by any other grade, so
	Prequizzes and Procto the deadline on the to work on them.	red Quizzes are due at a see days, the assignment	7:00 pm on the days listed below—after is will close and you will no longer be able
	Date Due	Assignment	Торіс
	<u>Section 1</u> Tue Sept 7	Quiz 1	IM forces, molecular geometry and polarity, molarity, calculations using <i>log</i> and <i>ln</i>
	Tue Sept 7	Quiz 2	Chapter 13 - Solutions
	Tue Sept 14	Quiz 3	Chapter 14 - Kinetics
Quiz Doadlinos	Section 2 Tue Sept 28	Quiz 4	Calculations using quadratic equation, Strong/weak acids and bases
	Tue Sept 28	Quiz 5	Chapter 15 - Equilibrium
	Tue Oct 5	Quiz 6	Chapter 16 - Acids and Bases
	Section 3		
	Tue Oct 26	Quiz 7	Ionic reactions and solubility rules; acid/base stoichiometry, Enthalpy calculations (ΔH _{rm} , Hess's Law, ΔH _f)
	Tue Oct 26	Quiz 8	Chapter 17 - Acid/base equilibria and solubility equilibria
	Tue Nov 2	Quiz 9	Chapter 18 - Entropy, free energy
	Section 4		
	Tue Nov 16	Quiz 10	Redox chemistry, 1 st order kinetics, basic atomic structure
	Tue Nov 30	Quiz 11	Chapter 19 - Electrochemistry
	Tue Nov 30	Quiz 12	Chapter 20 - Nuclear chemistry
Make-up Exams	There are no make-up	exams (see above).	
Extra Credit	I nere is no extra cred	It.	
Class Attendance	Your attendance is C support this stateme D's, F's or withdrew	RITICAL to your succes ent: students that missed from the course. Botton	ss in this class. Results from Fall 2006 just 4 of the first 21 lectures ended up with In line: DO NOT SKIP CLASS.

	What: McGraw-Hill's ARIS (Assessment, Review, and Instruction System) is an electronic homework and course management system that we will be using for online quiz assignments.
	Where: Go to http://www.mharis.com/
	 First-time Registration/Create a New Account: follow the procedure outlined in "ARIS Quickstart Guide.pdf," located on the eLearning course site
ARIS details	 Enrolling for Course: follow the procedure outlined in "ARIS Quickstart Guide.pdf," located on the eLearning course site.
	• The COURSE CODE is: FBA-3A-FB3
	• Be sure to enter your university name as it appears for the registrars office and grade book. Failure to do so will result in you not receiving credit for work you do. This is your responsibility.
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.
Calculators on Proctored Assignments	Only non-graphing and non-programmable calculators are allowed on proctored quizzes, midterm exams and the final exam. Non-approved calculators will be confiscated by the instructor. <u>Use of a non-approved calculator will be considered an act of scholastic</u> <u>dishonesty and will be dealt with appropriately (see Section "Academic Integrity"</u> <u>below</u>)
Peer Instructional Support	Peer Led Team Learning (PLTL) will not be offered for this class.
Classroom Decorum	Students should conduct themselves in a manner appropriate to a University classroom setting. Any behavior that is disruptive, inconsiderate, or offensive is subject to disciplinary action. Cellular telephones should be silenced during class. Computers may be used in class for the purposes of notetaking or other class-related activities, but should otherwise not be used.
	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.
Student Conduct and Discipline	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:
	http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html
	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 earning are unbetter civil or circular product and a standards are subject to a standards of conduct whether such conduct takes place on or

	The faculty expects you to display 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.
Academic Integrity	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.
	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.
Copyright Notice	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: http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm
Email Use	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 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.
	Our policy is to not communicate any details regarding your grade through email. We will only discuss grades and grading in person.
Technical	If you experience any problems with your UTD account, you may send an email to:
Withdrawal	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, the instructor cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" if you choose not to attend the class once you are enrolled.
	Undergraduate last day to withdraw with WP/WF: Mon, October 25 Procedures for student grievances are found in Title V. Rules on Student Services and
	Activities, of the university's Handbook of Operating Procedures.
Student Grievance Procedures	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.
	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.
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	The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.
	The contact information for the Office of Disability Services is: The University of Texas at Dallas, SU 22 PO Box 830688 Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY) <u>disabilityservice@utdallas.edu</u>
	If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of Disability Services. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal, disability- related accommodations are necessary, it is very important that you be registered with Disability Services to notify them of your eligibility for reasonable accommodations. Disability Services can then plan how best to coordinate your accommodations.
	It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor ASAP after class or during office hours.
	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.
Religious Holy Days	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.
	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.

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