



Course	CHEM 3321.001
Professor	Dr. Warren J. Goux
Term	Fall 2007
Meetings	MWF, 8:30 – 9:20 am, CB 1.120

Professor's Contact Information

Office Phone	972-883-2660
Office Location	Berkner Hall (BE), room 3.510
Email Address	wgoux@utdallas.edu
Office Hours	MW 10:00 am - noon or by appointment. Please contact me by phone or email before coming to see me outside office hours. This insures that I will be available for you.

General Course Information

Pre-requisites, Co-requisites, & other restrictions	CHEM 2325, PHYS 2325 and MATH 2451, or consent of instructor (CHEM 3361 is recommended).
Course Description	Physical Chemistry I is designed to provide students of chemistry and biochemistry with a fundamental understanding of thermodynamics, chemical and phase equilibria, transport properties and kinetics.
Learning Outcomes	<p><u>Objectives</u> Fundamental properties of macroscopic biophysical chemical systems are introduced and described in quantitative terms. A core of topics in thermodynamics, molecular motion and transport properties and kinetics, is supplemented with topics germane to students taking physical chemistry with biophysical applications.</p> <p><u>Expected Learning Outcomes</u> Upon successful completion of this course, students will therefore:</p> <ol style="list-style-type: none">1. Demonstrate the use of the three laws of thermodynamics in calculating chemical and phase equilibria and assessing the spontaneity of chemical processes;2. Interpret transport properties, such as diffusion, viscosity, and electrophoresis, in terms of kinetic theory;3. Explain the rates of chemical reactions and enzyme kinetics in terms of simple models.
Required Texts & Materials	<i>Physical Chemistry; 8th edition; Peter Atkins, Julio de Paula; W.H. Freeman</i>

Schedule & Topics Outline

Period	Date	Chapter	Description
1	17-Aug	1	Properties of gases; The perfect gas
2	20-Aug	1	Real gases
3	22-Aug	2	The First Law; Work, heat and energy
4	24-Aug	2	Internal energy, heat transactions,
5	27-Aug	2	enthalpy, thermochemistry
6	29-Aug	2	state functions
7	31-Aug	2	exact differentials
8	5-Sep	3	The Second Law: Chapt 2 Hmwk due
9	7-Sep	3	entropy and spontaneous change
10	10-Sep	3	Helmholz and Gibbs functions
11	12-Sep	3	Combining First and Second Laws
12	14-Sep	3	Maxwell's expressions; Chapt 3 Hmwk due
13	17-Sep		EXAM 1
14	19-Sep	4	Physical transformations of pure
15	21-Sep	4	substances; Phase diagrams
16	24-Sep	4	Phase stability and phase transitions
17	26-Sep	4	Phase boundaries
18	28-Sep	5	Simple mixtures; Chapt 4 Hmwk due
19	1-Oct	5	Partial molar quantities; thermo of mixing
20	3-Oct	5	Chemical potential, liquid mixtures
21	5-Oct	5	Colligative properties; activities
22	8-Oct	5	Activities of ions in solution
23	10-Oct	6	Phase diagrams; Chapt 5 Hmwk due
24	12-Oct	6	The phase rule; Two-component systems
25	15-Oct	6	Vapour pressure diagrams
26	17-Oct	7	Chemical equilibria; Chapt 6 Hmwk due
27	19-Oct	7	Spontaneous chemical reactions
28	22-Oct	7	Response of equilibria to conditions
29	24-Oct	7	Effects of pressure, temperature on
30	26-Oct	7	equilibria; Equilibrium electrochemistry
31	29-Oct	7	Standard potentials; Chapt 7 Hmwk due
32	31-Oct		EXAM 2
33	2-Nov	21	Molecules in motion
34	5-Nov	21	Molecular motion in gases
35	7-Nov	21	Molecular motion in liquids
36	9-Nov	21	Mobility of ions
37	12-Nov	21	Diffusion; Chapt 21 Hmwk due
38	14-Nov	22	Rates of chemical reactions
39	16-Nov	22	Empirical approaches; relaxation methods
40	19-Nov	22	Elementary reactions
41	21-Nov	22	Unimolecular reactions; Chapt 22 Hmwk due
42	26-Nov		EXAM 3
	3-Dec		FINAL EXAM 8:00 am - 10:45 am

Course Policies

Grading (credit) Criteria	<p><u>Course Evaluation:</u></p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">(i) Homework for credit*</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>(ii) Exams, best 2 of 3* (3 x 20%)</td> <td style="text-align: right;">60%</td> </tr> <tr> <td>(iii) Final Exam</td> <td style="text-align: right;">40%</td> </tr> </table> <p>(i) Homework: Assigned homework problems from the text will be posted on WebCT. A separate homework set for credit will also be assigned and posted on WebCT. Homework for credit due dates are posted in the schedule above. If you turn in homework for credit, your lowest homework score will be dropped and the remaining homework sets turned in for grading can replace your lowest exam score if the average homework score is higher than the lowest exam score. Even if you choose not to turn in homework for grading, working the problems is essential for scoring well on the exams. (Imagine running a marathon with no training!). Solutions to most homework problems will be posted on WebCT sometime prior to exams. You are ALWAYS welcome (encouraged with open arms!) to visit Dr. Goux and have him help you. However, each student is on his/her own with the homework problems turned in for grading.</p> <p>(ii) There will be no makeup exams given. If you have a valid excuse for missing an exam (documented illness, university sporting event, observance of religious holiday, etc.) your final exam grade will be substituted for the missed exam. If you do not have a university acceptable excuse, your highest homework sets turned in for credit will be substituted for the missed exam. If you do not turn in homework for credit, you will receive a score of zero for the missed exam.</p> <p>Exam Format: Exam format will vary from exam to exam. Generally, however, questions on exams will resemble homework problems. Chemistry is a science that requires both memorization and deduction using problem-solving skills. You will be expected to know all of the concepts contained in chapters. You may bring a 3" x 5" card (crib card) to the exam with as many formulas on one side as you can fit. You will NOT be expected to memorize tables of data or physical constants (these will be provided). You may not copy excerpts from chapters on your crib card. If you are unclear on whether other information contained in chapters is allowed on your crib card, it is best to ask your instructor. You will turn in your crib card with the exams.</p> <p>Be On Time: It is best to be early to exams. This will give you the opportunity to mentally prepare yourself for the exam. ALL 3 "hour" exams will be 50 min long. You may arrive up until the first student finishes his/her exam (grace period), the 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. Note: There is no way of determining when the first student will finish his/her exam.</p> <p>Grading errors: If you feel that an error has been made in grading of your exam you have up until one week after the exam is returned to bring the errors to the attention of the instructor. Errors found after this time will not be considered for more credit.</p> <p>(iii) Final Exam: The final exam will be comprehensive and cannot be replaced by any other grade, so don't miss it. The final exam cannot be dropped.</p>	(i) Homework for credit*	20%	(ii) Exams, best 2 of 3* (3 x 20%)	60%	(iii) Final Exam	40%
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	<p><i>No makeup final will be given.</i></p> <p><i>Final exam questions:</i> The final exam is comprehensive and approximately the same number of questions will be asked from each of the chapters covered in the text.</p>
Make-up Quizzes & Exams	There are no make-up exams (see above).
Extra Credit	There is no extra credit . However, you may obtain maximum credit by attending class, taking all the exams and mentally being prepared to participate in class.
Computer	Relevant course material including, exam keys, and homework solutions will be posted at <u>WebCT</u> . You may log onto the WebCT site using your UTD assigned net ID and password.
Class Attendance	Your attendance and class participation will have an impact on your final grade. Taking an active role in your learning will help you perform better. <i>Lecture material:</i> Some Lecture material may be downloaded from the WebCT site. However, unless you come to class you will not be getting all of the material covered in lecture.
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, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3</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).</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>Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.</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</p>

	turnitin.com, which searches the web for possible plagiarism and is over 90% effective.
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 U.T. Dallas 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. Mail sent to you by the instructor will be sent to your university email address. If you wish to use other email addresses, you will need to visit http://netid.utdallas.edu/ and set up mail forwarding.
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. The last day to drop without a "W" is June 6, 2006. The last day to drop the class with a "WP/WF" is July 5, 2006.
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	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	<p>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.</p> <p>The contact information for the Office of Disability Services is: The University of Texas at Dallas, SU 22</p>

	<p>PO Box 830688 Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY)</p> <p>Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.</p> <p>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 after class or during office hours.</p>
<p>Religious Holy Days</p>	<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, preferably 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.