



<b>Course</b>	<b>CHEM 1312, section 081: General Chemistry II</b>
<b>Professor</b>	Gregg R. Dieckmann (Dr. D)
<b>Term</b>	Summer 2007
<b>Meetings</b>	MTWR 11:00 am to 12:25 pm, FN 2.102 (Kusch Auditorium)

### Professor's Contact Information

<b>Office Phone</b>	972-883-2903
<b>Office Location</b>	Berkner Hall (BE), room 2.522
<b>Email Address</b>	dieckgr@utdallas.edu
<b>Office Hours</b>	In my office: Mon 9:00 to 10:00 am; Tues 10:00 to 11:00 am Also: PLEASE feel free to stop by WHENEVER you have a question
<b>Other Information</b>	Best way to contact me: email listed above or stop by my office; I don't read WebCT email

### General Course Information

<b>Pre-requisites, Co-requisites, &amp; other restrictions</b>	One year of high school chemistry and one semester of college general chemistry (e.g. CHEM 1311) are assumed.
<b>Course Description</b>	A continuation of CHEM 1311 treating metals; solids, liquids, and intermolecular forces; chemical equilibrium; electrochemistry; organic chemistry; rates of reactions; and environmental, polymer, nuclear, and biochemistry.
<b>Learning Outcomes</b>	<p><u>Objectives</u> This course 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 concepts. Basic problem solving skills and critical thinking continue to be emphasized in this course.</p> <p><u>Expected Learning Outcomes</u> Upon successful completion of this course, students will therefore:</p> <ol style="list-style-type: none"><li>1) be able to use their understanding of intermolecular attractive forces that determine the properties of the states of matter and phase behavior by predicting colligative properties and the characteristics of solutions</li><li>2) 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 (LeChatelier's Principle)</li><li>3) 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</li><li>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 <math>\Delta H</math>, <math>\Delta S</math> and <math>\Delta G</math>; and (c) determine standard and non-standard cell potentials and equilibrium constants from cell potential data for oxidation/reduction reactions</li><li>5) be able to use their understanding of intermolecular attractive forces that determine be able to demonstrate an understanding of the basic concepts of chemical kinetics, how rate and equilibrium properties are related, and how these topics relate to major scientific issues by utilizing this knowledge to solve kinetics calculations and evaluate reaction mechanisms</li></ol>
<b>Required Texts &amp; Materials</b>	<i>Chemistry: Matter and Its Changes, 4th Edition</i> by James E. Brady and Fred Senese course materials located on WebCT at <a href="http://webct6.utdallas.edu/">http://webct6.utdallas.edu/</a>
<b>Supplemental Texts, Readings, &amp; Materials</b>	** <i>General Chemistry</i> version 3.0 (interactive DVD-ROM covering one year of freshman general chemistry); available through CSA or online at <a href="http://www.t2i2edu.com">http://www.t2i2edu.com</a> <i>Study Guide for Chemistry: Matter and Its Changes, 4th Edition</i> by Brady <i>Student Solutions Manual for Chemistry: Matter and Its Changes</i> by Nicholas Drapela

## Schedule & Academic Calendar

<b>Section 1</b>	<b>May 29<sup>th</sup> to June 6<sup>th</sup> (6 lectures)</b>	
	Introduction/Intermolecular attractions: liquids and solids	Chapter 12
	Le Chatelier's Principle/phase diagrams	12
	Structure of solids	Chapter 13.1–13.3
	Solutions: heats of solutions	Chapter 14
	Solubility: temperature and pressure effects	14
	Concentrations	14
	Colligative properties: boiling pt. elevation/freezing pt. depr	14
<b>Section 2</b>	<b>June 7<sup>th</sup> to June 18<sup>th</sup> (5 lectures)</b>	
	Kinetics: factors affecting reaction rates	Chapter 15
	Concentration vs. rate	15
	Concentration vs. time	15
	Concentration vs. time	15
	Reaction rate theories/activation energies	15
	Dynamic equilibrium; equilibrium law	Chapter 16
	Magnitude of K; calculating K from thermodynamic data	16
	Le Chatelier's principle	16
	Equilibrium calculations	16
<b>Section 3</b>	<b>June 19<sup>th</sup> to June 28<sup>th</sup> (6 lectures)</b>	
	Bronsted acids and bases	Chapter 17
	Strengths of Bronsted acids and bases	17
	Lewis acids and bases: properties of elements and oxides	17
	Ionization of water/pH/strong acids and bases	17
	Ionization constants for weak acids and bases	Chapter 18
	Equilibrium calculations	18
	Solutions of salts: ions as weak acids and bases	18
	Buffers: control of pH	18
	Acid/base titrations	18
	Solubility equilibria for salts; $K_{sp}$	Chapter 19.1
	Solubility equilibria for salts; common ion effect	19.1
	Selective Precipitation	19.3
<b>Section 4</b>	<b>July 2<sup>nd</sup> to July 11<sup>th</sup> (5 lectures)</b>	
	First law of thermodynamics	Chapter 20
	Entropy, third law of thermodynamics	20
	Gibb's free energy	20
	Free energy changes/maximum work	20
	Free energy and equilibrium	20
	Galvanic cells	Chapter 21
	Cell potentials and reduction potentials	21
	Cell potentials and free energy changes	21
	Electrolysis/Stoichiometry of electrochemical reactions	21
<b>Section 5</b>	<b>July 12<sup>th</sup> (1 lecture)</b>	
	Nuclear Chemistry	Chapter 22

**Exam Schedule:**

<b>Mon</b>	<b>June 11</b>	<b>Exam 1</b>
<b>Wed</b>	<b>June 20</b>	<b>Exam 2</b>
<b>Tues</b>	<b>July 3</b>	<b>Exam 3</b>
<b>Mon</b>	<b>July 16</b>	<b>Exam 4</b>

**TBD** **Final Exam (NOTE: to be held in TBD)**

	Monday	Tuesday	Wednesday	Thursday
05/28 – 05/31		<b>Introduction</b>	Section 1	Section 1
06/04 – 06/07	Section 1	Section 1	Section 1	Section 2 <i>HW 1,2,3 due</i>
06/11 – 06/14	<b>Exam 1</b>	Section 2	Section 2	Section 2
06/18 – 06/21	Section 2	Section 3 <i>HW 4,5 due</i>	<b>Exam 2</b>	Section 3
06/25 – 06/28	Section 3	Section 3	Section 3	Section 3
07/02 – 07/05	Section 4 <i>HW 6,7,8 due</i>	<b>Exam 3</b>	<b>July 4<sup>th</sup> No class</b>	Section 4
07/09 – 07/12	Section 4	Section 4	Section 4	Section 5 <i>HW 9 due</i>
07/16 – 07/19	<b>Exam 4</b>	<b>Last Day: Final Review</b>		
07/23 – 07/24				

### Course Policies

<b>Grading (credit) Criteria</b>	<p><u>Course Evaluation:</u></p> <table style="margin-left: 40px;"> <tr> <td>(i) Homework</td> <td style="text-align: right;">15%</td> </tr> <tr> <td>(ii) Midterm Exams (4 x 15%)</td> <td style="text-align: right;">60%</td> </tr> <tr> <td>(iii) Final Exam</td> <td style="text-align: right;">25%</td> </tr> </table> <p>(i) <b>Homework:</b> There will be assigned homework from the Brady textbook (ungraded) and from other sources (graded) on the covered material. It is important that you do ALL homework that is assigned, even if it is not graded—chemistry involves problem solving, and doing the homework will give you important practice.</p> <p>There will be 9 homework assignments collected and graded. Homework turned in after the due date/time will be marked down 10% immediately, with an additional 10% deduction for each additional 24 hours it is late. <b>Translation: turn it in on time.</b> Your two lowest homework scores will be dropped.</p> <p>(ii) <b>Midterm exams:</b> ALL 4 MIDTERM EXAMS MUST BE TAKEN, at the scheduled time and on the scheduled day. <b>There will be no makeup exams given.</b> The lowest of the 4 exam scores will be automatically replaced by a higher final exam score. If you have an <b>acceptable, documented reason</b> 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 up until 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".</p> <p>(iii) <b>Final Exam:</b> The final exam must be taken, will be comprehensive and cannot be replaced by any other grade, so don't miss it. <b>No makeup final will be given. NOTE THE LOCATION CHANGE to TBD</b></p>	(i) Homework	15%	(ii) Midterm Exams (4 x 15%)	60%	(iii) Final Exam	25%
	(i) Homework	15%					
(ii) Midterm Exams (4 x 15%)	60%						
(iii) Final Exam	25%						
<b>Make-up Exams</b>	There are <b>no make-up exams</b> (see above).						
<b>Extra Credit</b>	There is <b>no extra credit</b> .						

<b>Late Work</b>	Homework turned in after the due date/time will be marked down 10% immediately, with an additional 10% deduction for each additional 24 hours it is late.
<b>Class Attendance</b>	Your attendance and class participation will have an impact on your final grade. Taking an active role in your learning will (guaranteed) help you perform better. There is a plan to record attendance and incorporate this into your grade (exact plan TBD).
<b>Student Conduct and Discipline</b>	<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>
<b>Academic Integrity</b>	<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 turnitin.com, which searches the web for possible plagiarism and is over 90% effective.</p>
<b>Email Use</b>	<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 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><b><i>My policy is to not communicate any details regarding your grade through email. I will only discuss these details in person with a student.</i></b></p>

<p><b>Withdrawal from Class</b></p>	<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><b><i>Undergraduates last day to withdraw without a W: June 5<sup>th</sup></i></b>  <b><i>Undergraduates last day to withdraw with WP/WF: July 3<sup>rd</sup></i></b></p>
<p><b>Student Grievance Procedures</b></p>	<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>
<p><b>Incomplete Grades</b></p>	<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 <b>F</b>.</p>
<p><b>Disability Services</b></p>	<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  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><b>Religious Holy Days</b></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>
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***These descriptions and timelines are subject to change at the discretion of the Professor.***