Course	**CHEM 1311.081 General Chemistry I**
Professor	Dr. Warren J. Goux
Term	Summer 2007, 8 week session
Meetings	MTWR 1:00 to 2:25 pm, MC 2.410

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 2:30 to 3:30 pm 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	One year of high school chemistry is assumed. If you have not taken HS chemistry I do not recommend that you take this course, especially during summer session.
Course Description	The course is divided into 4 sections
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	*Chemistry: Matter and Its Changes, 4th Edition* by James E. Brady and Fred Senese
Suggested Texts, Readings, & Materials	*Study Guide for Chemistry: Matter and Its Changes, 4th Edition* by Brady *Student Solutions Manual for Chemistry: Matter and Its Changes* by Nicholas Drapela

Schedule & Topics Outline

Section 1	**May 30th to June 6th (5 lectures)**	
	The scientific method: properties of matter	Chapt 1
	Atomic theory: chemical symbols: atomic structure	Chapt 1
	Atomic theory: relative masses: definite proportions	Chapt 1
	The periodic table	Chapt 1
	Chemical formulas: naming compounds	Chapt 2
	Chemical reactions: heat and energy	Chapt 2
	Ionic compounds: naming ionic compounds	Chapt 2
	Common oxidation numbers of ions: polyatomic ions	Chapt 2
	Units of measurement: converting units using dimensional analysis	Chapt 3
	Significant figures	Chapt 3
Section 2	**June 11th to June 20th (7 lectures)**	
	The mole: the link between mass and number of atoms	Chapt 4
	Deriving empirical formulas from experimental mass measurements	Chapt 4
	Deriving empirical formulas by indirect analysis	Chapt 4
	Balancing simple chemical equations by inspection	Chapt 4
	Using stoichiometry to determine yield: limiting reagents	Chapt 4
	Solution properties: electrolytes and nonelectrolytes	Chapt 5
	Dissociation of ions in aqueous solution	Chapt 5
	Solubility rules: Predicting metathesis reactions	Chapt 5
	Acids and bases: the Arrhenius theory: acid and base nomenclature	Chapt 5
	Oxoacids and acid anhydrides: strong and weak acids and bases	Chapt 5
	Solute concentration: stoichiometry of ions in solution: titrations	Chapt 5
	Redox reactions: rules for assigning oxidation numbers	Chapt 6
	Identifying oxidation and reduction in chemical reactions	Chapt 6
	Balancing redox reactions	Chapt 6
	Oxidizing and nonoxidizing acids	Chapt 6
	The acitivity series	Chapt 6
	Oxidation by combustion	Chapt 6
Section 3	**June 25th to July 9th (8 lectures)**	
	Atomic spectra, structure and the Bohr model of the atom	Chapt 8
	Modern view of the atom: electron waves and orbitals	Chapt 8
	Electron configurations in atoms: The Aufbau Principle	Chapt 8
	Shapes of orbitals: Sizes of atoms and ions	Chapt 8
	Ionization energy and electron affinities of atoms	Chapt 8
	Chemical bonding in ionic compounds: lattice energy	Chapt 9
	Lewis electron structures of atoms: the octet rule	Chapt 9
	Lewis electron structures of molecules: covalent bonding	Chapt 9
	Formal charges and resonance structures in molecules	Chapt 9
	Properties of covalent bonds: dipole moment: electronegativity	Chapt 9
	VSEPR theory: geometry and shapes of molecules	Chapt 10
	Valence Bond theory: the shapes of bonding orbitals	Chapt 10
Section 4	**July 11th to July 17th (4 lectures)**	
	Heat and work: temperature, a measure of internal energy	Chapt 7
	Heat capacity: specific heats: calorimetry	Chapt 7
	Enthalpy and heats of chemical reactions: Hess's Law	Chapt 7
	Heats of formation	Chapt 7
	Pressure and pressure measurements	Chapt 11
	Boyle's Law: Charles' Law: Law of Gay-Lussac	Chapt 11
	Ideal gas equation (Peev equals nert): Avogadro's Principle	Chapt 11
	Gas densities: Mixtures of gases: partial molar quantities	Chapt 11
	Kinetic Theory of Gases: effusion and diffusion: Graham's Law	Chapt 11

Exam Schedule:

Thurs	**June 7**	**EXAM 1**
Thurs	**June 21**	**EXAM 2**
Tues	**July 10**	**EXAM 3**
Wed	**July 18**	**FINAL EXAM 1:00 – 3:45 pm MC 2.410**

Scheduled Quizzes:

Thurs	**June 14**
Thurs	**June 28**
Thurs	**July 5**

In addition to scheduled quizzes we may have "pop" (unscheduled) quizzes. Quiz 1 will cover the class syllabus.

	Monday	**Tuesday**	**Wednesday**	**Thursday**
05/28 – 05/31			Section 1	Section 1
06/04 – 06/07	Section 1	Section 1	Section 1	***Exam 1***
06/11 – 06/14	Section 2	Section 2	Section 2	Section 2 ***Quiz 1***
06/18 – 06/21	Section 2	Section 2	Section 2	***Exam 2***
06/25 – 06/28	Section 3	Section 3	Section 3	Section 3 ***Quiz 2***
07/02 – 07/05	Section 3	Section 3	***4th of July*** ***No class***	Section 3 ***Quiz 3***
07/09 – 07/12	Section 3	***Exam 3***	Section 4	Section 4
07/16 – 07/19	Section 4	Section 4	***Final Exam***	

Course Policies

Grading (credit) Criteria

Course Evaluation:

(i) Quizzes	10%
(ii) Class participation	5%
(ii) Exams (3 x 20%)	60%
(iii) Final Exam	25%

(i) *Homework:* There will be assigned homework from the Brady textbook. These assignments will be posted on the WebCT website. 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. Solutions to homework problems will also 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 with these

problems. There is no question too trivial. Some students have been known to camp outside his office.

(ii) Quizzes: Quizzes will generally be over assigned homework problems. There will be 3 scheduled quizzes and there may also be "pop" quizzes. Quizzes do NOT require that you bring a scantron. The first quiz will test over the class syllabus and credit on the quiz will be given for recalling the secret password argon. The lowest quiz score will be dropped in calculating your final average. ***There are no make-up quizzes.***

(iii) *In-class participation*: 5% of your grade will be determined by class participation. Students who are present in class, participate in class problem solving sessions, or regularly visit with the instructor to work on homework problems will receive more credit in this area than those who do not. From time to time class attendance will also be taken and credit will be given for those present. Bring your calculator to class for in-class problem solving sessions.

(iv) *Exams:* ALL 3 EXAMS MUST BE TAKEN, at the scheduled time and on the scheduled day. ***There will be no makeup exams given***. The final exam will be cumulative. If your final exam score is higher than your lowest exam score, your lowest exam score will be dropped and replaced with the score from your final exam.

Missed Exam: If you have an ***acceptable reason*** for missing an exam (i.e., documented illness, auto accident, participation in UTD sponsored sporting event, observance of religious holiday) you will be allowed to drop the missed exam with no penalty. If, for any reason, you miss two exams, you will receive a "zero" for the second missed exam. If you do not have an acceptable excuse for missing an exam or you miss an exam due to tardiness (see below) a score of "zero" will be averaged into your exam grade and your second lowest exam score will be dropped.

Bring: To all exams you will need to bring (1) a scientific calculator (any type) (2) A scantron form F-1712-Par-L. These forms may be purchased at the University Bookstore or the Off-Campus Bookstore. To insure availability it is best to purchase 4 or more of them ahead of time. Before coming to class bubble in the last six digits of your social security number as your ID (left justified) and write and bubble in your name. (3) A no. 2 pencil to be used on all exam questions.

Exam Format: Exam format will vary from exam to exam. Generally, however, there will be both short answer and multiple choice questions on an exam. Use your scantron form to answer all multiple choice questions in the space on the scantron designated for that question. That is, if question #1 and #3 are short answer and #2 is a multiple choice question, you will mark your choice for question #2 in the space on the scantron for question #2.

What you have to memorize: 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 and all mathematical equations needed to solve problems. You will also be expected to know names and symbols for all of the elements, common and systematic names for ions and their common oxidation states (Table 2.4 and 2.6) and names and symbols for polyatomic ions (Table 2.5). You also should know solubility rules (Table 5.2), strong and acids and bases and

	oxoacids and their nomenclature (Sections 5.6 & 5.7). You will be given a periodic table on all quizzes (where one is needed) and exams and you will be given physical constants and conversion factors. You will NOT be expected to memorize tables of data, such as specific heats (Table 7.1), heats of formation (Table 7.2) or the activity series (Table 6.2). If you are unclear on whether other information contained in chapters should be memorized, it is best to ask your instructor. *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 85 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 and will receive a score of "zero". Note: There is no way of determining when the first student will finish his/her exam. *Grading errors:* Errors in grading exams unfortunately occur, especially with larger class sizes and multiple TAs helping in the grading of the exam. Following exams the keys will be posted on the Blackboard website and, if time allows, the solutions will be reviewed in class. 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 be duly noted but not be considered for more credit. *(v)* *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. No makeup final will be given***. Bring a scantron to the final exam. The final exam will be from 1:00 – 3:45 pm July 18th in MC 2.104 *(vi)* *Final exam questions*: The final exam is comprehensive and approximately the same number of questions will be asked from each of the chapters covered in the text. The exam format will be all multiple choice.
Make-up Quizzes & Exams	There are **no make-up quizzes or exams** (see above).
Extra Credit	There is **no extra credit**. However, you may obtain full credit by attending class and mentally being prepared to participate in class.
Computer	Relevant course material including lecture notes, exam keys, quiz keys, practice exams and homework solutions will be posted at http://webct.utdallas.edu. You may log onto the site using your UTD assigned net ID and password. The site contains a discussion board, class notes when available, homework assignments, old exams and solutions to homework and old exams. Grades for exams and quizzes will also be posted on webCT.
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.
Student Conduct and Discipline	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, *A to Z Guide*, which is provided to all registered students each academic year. 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 *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the

	university's *Handbook of Operating Procedures*. 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). 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.
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 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. 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.
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	Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating 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 deal 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) 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. 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.
Religious Holy Days	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. 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.

	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 timelines are subject to change at the discretion of the Professor.