

Course Syllabus
General Chemistry II - CHM 139.02 [CHEM 1312]
Department of Chemistry, College of Arts and Sciences
Fall 2007

Location of Class Meeting: CFS-101 (11:00-11:50 MWF)

Instructor: Dr. Paul A. Loeffler

Instructor Contact Information:

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b. Room: CFS-304

Office Hours (To be announced when the professor's assignment is finalized.)

Generally, Mon. & Wed. 10:00- 10:50, Tu & Thur 9:30-10:20, and Mon 1:00 – 1:50

Help Session: (To be announced.) Generally, Wed., 3:00 in CFS-121

Course Description

- This is the second semester of general chemistry for science majors.
- Prerequisite course(s): mastery of high school algebra; CHM 138 and MTH 170 with a C or better
- Approach/method of instruction: lecture to provide guidance and direction, web assisted lectures to provide focused activities but primarily individual study to accomplish the course objectives
- Types of exams: The exams will consist of five parts: vocabulary (define a term), nomenclature (provide a formula or chemical name), reactions (predict the products of reactions and balance an equation), short answer or multiple choice (facile assessment of concepts) and long answer, word problems (problems like those in the text).

Course Objectives

- The student will gain factual knowledge (terminology, classifications, methods, trends)
- The student will learn fundamental principles, generalizations and theories.
- The student will learn to apply course material
(to improve thinking, problem solving and decision making)

Required Textbook (your new, soon-to-be, intimate friend)

- Chemistry: *The Central Science by Brown*, by LeMay and Bursten Tenth Ed., Prentice Hall

Required Supplies

- A TI-30 series calculator, scientific notation and exponentiation/lograthims required. Alphanumeric calculators are not allowed during exams; the TI-30 is the only calculator to be used.
- A three-ring note book for lecture outlines, web assignments and notes.
- A bound notebook for worked homework problems.

Attendance Policy

An accurate attendance record will be maintained for the semester. Five percent of the course grade will be associated with attendance. If a student has three or fewer absences then he/she will receive an "A grade" for the five percent toward the course grade (the maximum.) Six absences or more will correspond to an "F grade" or zero credit for attendance. (#abs. = grade 0<4= A; 4 = B; 5 = C; 6 = F)

Assignments

Many assignments will be posted on Blackboard. It is the student's responsibility to complete these assignments to his or her satisfaction. No participation points are associated with most activities, as value is directly related to performance points acquired on quizzes and examinations. Note: If you can't work it at home then you won't be able to work it on an exam! Selected homework assignments on Blackboard will be graded exercises using the Blackboard functions.

Additional experiential learning activities will be assigned to the class during class as either open-book or closed-book exercises. "Quizzes", class work, and homework constitute ten percent of the course grade. These exercises are sampled for grading as a representation of student effort and ability. Generally 50% correct is required for a grade of F or higher.

Exams

Progress in the course will be reported by three midterm exams and a comprehensive final exam.

Grading Plan

- The final course grade's weighted distribution will be calculated and the grading scale that will be used is as follows:

Attendance:	5%
Homework/Quizzes/ Experiential Learning	10%
Midterm Exams (3):	51%
Comprehensive Final Exams (2):	34%
- Failure to complete course requirements: course grade of "F"
- The grading scale for the course employs a "curved" scale using the familiar "GPA" scale as more precise numeric replacements for letter grades A+ through F-. This results in a grade distribution for the course grade as follows:
 $4.00-4.99 = A$; $3.00-3.99 = B$; $2.00-2.99 = C$; $1.00-1.99 = D$; $0.01-0.99 = F$; $0.0 = F-$
 Please note that examination performance in the 40% range will result in a 0.0 grade, an F-grade, meaning a "hopeless" failure in performance. The grade distribution and cut-offs are determined by assigning the mean score for the top 10% of the class as a middle "A grade" or 4.50 and half of this mean score as a minimally passing grade of D- or 1.00. Individual student scores are determined by interpolation between these values. Some grades on the extremes are truncated to maintain the range of scaled scores between 4.99 and 0.00, A+ and F-.
 Assessment of performance of student progress during the semester is best acquired by simply averaging examination grades. Exam performance constitutes 85% of the course grade!
- There are no make-up exams. The comprehensive portion of the Final Exam will count as the make-up exam and its grade will be substituted for the 0.0 recorded score of the missed exam. Please note this reference is to only one missed exam!

Academic Dishonesty

Any answer that is not your own or a product of your own thinking is an inappropriate answer and it is academically dishonest to represent it as your own. It is like evaluating stealing; if it isn't yours then it doesn't belong to you, so don't take it or use it.

Any response that has been changed to acquire a "higher grade" is also an inappropriate answer. Presenting an inappropriate or a corrected answer is academically dishonest. It is like evaluating lying; if it is not represented accurately and truthfully, then it is a lie.

Students who bring materials or items to class that are disallowed during examination periods will have displayed academically dishonest behavior. Examples include bringing "cheat sheets" and "extra notes" or alphanumeric calculators and text-messaging-capable cellular phones to class. If it doesn't belong; don't bring it to class.

It is expected that if a student acts in a manner that is not above reproach, then he or she shall bring this to the attention of the instructor. If a student has knowledge of a fellow classmate whose behavior is inappropriate then the student shall bring this to the attention of the instructor.

Students who have been academically dishonest will receive an "F" on the referenced graded material if self-disclosure occurred or will receive an "F" as a course grade and be subject to university disciplinary action if the instructor or other students discover and disclose the inexcusable breach of academic integrity.

Study Tips

The exams will consist of five parts: vocabulary (define a term), nomenclature (provide a formula or chemical name), reactions (predict the products of reactions and balance an equation), short answer or multiple choice (facile assessment of concepts) and long answer (problems like those in the text).

Read your textbook, not just once but many times. Read a chapter section one time smoothly for overview and then return for a slow, detailed analysis. Read interactively, engaging with the book by making margin notes and redrawing figures and graphs. Find words in the text that you do not know and learn their definitions; keep a glossary of these terms for constant review. Learn the symbols and formulas as promptly as possible; review them frequently. Without these words with their rich meanings and the symbols with their detailed information, you cannot think Chemistry. If you can't think Chemistry, you can't understand Chemistry and you can't do Chemistry. It's that simple; a false start here means you fail!

Learn to recognize classes of reactants and practice predicting chemical interactions. Translate formulas into names and use names to generate appropriate reaction products and these product names to create formula equations then balanced chemical equations. First you must know the types of substance reactions. Know when to deal with chemical change on the atomic, ionic and molecular level. Know how to classify these species reactions. Go to your text, other freshman texts located in the library or to study guides and, if available, to the publisher's on-line practice material to find practice multiple choice exercises and open response questions. Practice, practice practice.

Work problems! Start with the in-chapter sample exercises and practice exercises. Master these first as the corresponding concepts are being covered in the lecture. Then, work all your end-of-chapter homework problems in a workbook and keep this record for your review. Work your problems slowly and systematically. Never expect to "recall" the answer. Approach a problem as a journey not a destination and enjoy the trip! Set up each problem in an orderly manner displaying discipline and patience. Remember, it is important to work ALL of the in-chapter sample problems and practice exercises before addressing the end-of-chapter problems. Never work a problem with the assistance of the textbook or your notes; you are being academically dishonest. And the crime you commit is self-inflicted. You only cheat yourself!

Schedule regular study periods exclusively which are two hours each day for directed study and concentrated practice in Chemistry. Arrange for additional study times during the weekends preceding each exam. Keep your understanding and mastery of the course material aligned with the lecture calendar; do not get behind! This is mainly a challenge of time-on-task.

CHM 139		Fall 2007	Tentative Course Schedule
Day	Date	Section	Content
1&2	22-Aug	Handout	Introduction & Review
3	24-Aug	10.1-4	Pressure, Gas Laws, Ideal Gas Equation
4	27-Aug	10.5	Density/Stoichiometry
5	29-Aug	10.6	Partial Pressure/Mole Fraction
6	31-Aug	11.2 & 11.5	Intermolecular Forces & Vapor Pressure
7	5-Sept	13.5	Colligative Properties
8	7-Sept	14.1-2	Chemical Kinetics; Reaction Rates
9	10-Sept	14.3	Concentration & Rate
10	12-Sept	14.4	Concentration vs. Time
11	14-Sept	14.5	Arrhenius Equation
12	17-Sept	21.1 & 21.4	Nuclear Chemistry; Rates of Decay
13	19-Sept		Exam 1 (Wednesday)
14	21-Sept	15.1	Chemical Equilibrium
15	24-Sept	15.2-3	Equilibrium Constant
16	26-Sept	15.4	Heterogenous Equilibria
17	28-Sept	15.5	Calculating K
18	1-Oct	15.6-7	Applications; Le Chatelier's Principle
19	3-Oct	16.1	Acid-Base Equilibria
20	5-Oct	16.2	Bronsted Lowry
21	8-Oct	16.3-4	Autoionization of Water; pH Scale
22	10-Oct	16.5	Strong Acids & Bases
23	12-Oct	16.6-7	Weak Acids and Bases
24	15-Oct	16.8-9	K _a & K _b ; Salts
25	17-Oct		Exam 2 (Wednesday)
26	19-Oct	17.1-2	Common Ion Effect; Buffer Solutions
27	22-Oct	17.4	Solubility Equilibria
28	24-Oct	17.5	Factors that Affect Solubility
29	26-Oct	19.1	Chemical Thermodynamics
30	29-Oct	19.2-3	Entropy; Molecular Interpretation
31	31-Oct	19.4	Entropy & Reactions
32	2-Nov	19.5-6	Gibbs Free Energy
33	5-Nov	19.7	Free Energy & K _{eq}
34	7-Nov		Exam 3 (Wednesday)
35	9-Nov	20	Electrochemistry
36	12-Nov	20.1	Oxidation States
37	14-Nov	20.2	Balancing Redox Equations
38	16-Nov	20.3	Voltaic Cells
39	19-Nov	20.4	Cell EMF & Standard Conditions
	21&23-Nov		Thanksgiving Break
40	26-Nov	20.5	EMF & Free Energy
41	28-Nov	20.6	EMF & Nonstandard Conditions
42	30-Nov	24	Coordination Compounds
43	3-Dec	24.1	Metal Complexes
44	5-Dec	24.2&.6	Ligands & Polydentates
45	7-Dec		Study Day