Honors Chemistry 1422 - Section 1 Spring, 2009 9:10 - 10:30 AM TTh 214 Williams

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This class is Service-Learning required and Communication Intensive (verbal & technology components)

Required Notes: **Full copy of class lecture notes (including examples of previous homework assignments & exams with answer keys) that will be posted on Prof. Stanley's web site (free download) and handed out in class.** I strongly recommend that you use a printed set of notes in class and annotate them with additional information presented during lecture.

Recommended* Text:** ***Chemistry (8th ed) by Whitten, Davis, Peck & Stanley (Thomson-Brooks/Cole publisher; ISBN # 0-495-01448-6). But you can also use almost any general chemistry textbook (see me if you have questions as to the suitability of a specific textbook).

Internet Web Site: **http://chemistry.lsu.edu/stanley** & Moodle. Class notes!! Assignments!! Announcements!!

Exams: There will be *three* 80 minute *"hourly"* exams during class and a comprehensive final exam. Make-up hourly exams are available to students who have legitimate medical excuses or other reasons that are up to me to decide whether I will allow you to take a make-up exam. In order to be considered for a make-up exam you MUST contact me within 24 hrs of the exam. I can factor a missed exam (& homeworks, quizzes) out of your final % grade under special circumstances (once again up to me to decide). There will be a make-up Final exam, but you need to get permission from your Dean to take the make-up Final.

The overall grading percentages are shown below:

Three hourly exams:	**30% (300 pts), Feb 12, March 19, April 23** *(dates could change)*
Final Exam:	**20% (200 pts), Weds, May 6, 10 AM - noon**
25 in-class Quizzes:	**10% (4 pts each, total of 100 points)**
Homework (Tech CI):	**30% (10 homeworks @ 30 pts each, total of 300 pts)**
Service-Learning & Verbal CI:	**10% (2 ChemDemo experiments for K-12 classes, 100 pts)**
ChemDemo Bonus assignment:	***40 pts bonus (max)***
1 or 2 bonus quizzes:	***4 or 8 pts bonus (max)***

Bonus points can be revoked for poor class behavior

This course is certified as a "Communication-Intensive Course" and meets all of the requirements explained on the CxC Web site: http://cxc.lsu.edu, including the following: Emphases on formal and informal assignments in written and visual communication, class time spent on communication, 40% of the final grade based on communication projects, revisions after faculty feedback on 2 formal projects (one for each emphasis), and a student/faculty ratio of 35:1. Because it meets these requirements, students may count it toward "Distinguished Communicator" certification on LSU transcripts.

Quizzes: There will be 25 regular in-class quizzes -- usually one per lecture. Each quiz will consist of a relatively simple question on the material being lectured on. Blank quiz sheets will be available at the beginning of each class to be used for each daily quiz – pick one up and fill in your name (printed & signed) when you enter the classroom. The quizzes serve several functions: 1) you will learn more if you come to class and this allows me to determine attendance; 2) they minimize talking and not paying attention in class – a pop quiz helps motivate you to focus on the lecture; 3) I get important feedback on what you are learning (or not learning) in class.

Homework & Communication Intensive Technology component: There will be 10 *graded* essay-style homework assignments for this course. Students can work on the homework together in study groups of one to four (or more). **Each student in a study group, however, must turn in their own hand-written copy of the homework.** Each study group should hand in the names of the students that will be involved in that study group by **Friday, January 16th.** Sheets of paper with element names will be handed out in class and available from Prof. Stanley. Groups will be referred to by the assigned **element names** (please use the full element name, not just the symbol on your homework). Homeworks handed in late (without medical or other official justification) **will lose 10 points per day turned in late.** Once I post the answer key for a homework, however, I will ***not*** accept that homework assignment. Students who want to work alone should still sign up on an element sheet and work as a group of one. **Failure to sign up for an element group may result in loss of some or all available bonus points.** You are welcome to change groups at any time – just let me know if you switch groups. At least two of the homework assignments will involve electronic-structure calculations using the *Gaussian 2003* and *GaussView 4* molecular orbital programs. Since these programs are only available for Windows or Linux computers, Macintosh users should have at least one Windows user in their study group (or load Windows on their Mac using Boot Camp or Parallels). This will be the Technology portion of the Communication Intensive portion of this course. Time permitting, the *ChemDraw* program will also be introduced and used for the organic chemistry chapter.

Class Discussion: I will be asking questions in class to study groups and calling on them by their study group **element name** (so please remember your study group element name!!). The group (if sitting together) will be able to discuss the question and answer as a group. **I, therefore, suggest that study groups try to sit near one another in class.** When I ask your group a question, you will be allowed a short period of time to discuss the question and answer it. A bonus credit "reward" for good class discussion will be given based on 1 or 2 extra in-class "bonus" quizzes (availability dependent on class behavior).

Service-Learning and Verbal Communication Intensive Components: This class is both **Service-Learning** and **Communication Intensive** (CI Verbal & Technology) certified (or will be). The service-learning and CI-verbal assignments will involve teaching 2 sets of K-12 classes using our ChemDemo program experiments. There are two teaching visits required using two different ChemDemo experiments. The first ChemDemo needs to be done by March 6, and the last by April 24. The teacher in the class will evaluate your teaching skills and give you up to 30 points for your presentation. You are also required to type a 2-4 page essay on your experience in the classroom teaching each ChemDemo – this will be worth a maximum of 20 points. Group members that visit K-

12 classrooms together can work together on their reflection essays, but I expect the essays to be somewhat different and for you to put in your own personality and perspectives into the essay. Details on this activity will be handed out separately.

Bonus ChemDemo Assignment: There will be one bonus service-learning assignment worth a **maximum of 40 points**. It will involve doing a ChemDemo for an additional K-12 class. Details on this will be handed out separately.

Grading Scale: ***NO CURVE!!*** All grades will be posted on Moodle.

A = 100-90%	B = 89-80%	C = 79-70%	D = 69-60%	F = below 60%

Office Hours: I have ***open*** office hours so feel free to stop by anytime ***except***: *lunch (12-1 PM), Fridays after 3:25 PM (we usually have departmental seminar), and 30 mins before lecture.* I will announce other times when I know that I will not be around. If my office door is closed, I am not around or *extremely* busy! If you see me talking to someone in my office, you may interrupt if you have a brief question or wish to turn something in to me. Otherwise, please show good manners and wait or come back a little later. Please feel free to call or E-mail before coming over to check if I am around. I have an answering machine so feel free to leave a message. **I am more than willing to make specific appointment times to meet with you -- *even on early evenings and weekends!***

Exam Help/Review Sessions: There will generally be a review sessions immediately prior to each exam (Tuesday or Wednesday) at times and locations to be announced. I review homework assignments and answer questions about the lecture material, previous homeworks, and exams. There will also be a review session scheduled before the final exam.

Class Rules: I expect everyone in class to respect everyone else's rights. I work extremely hard to present an educational and entertaining lecture. Correspondingly, I expect you to pay attention to what I am saying and to make an honest effort to learn the material and complete assignments on time. **Failure to do so will result in loss of all BONUS points available to you. Continued violations will result in your ejection from the class. I also despise cheaters (including plagiarism) and will prosecute students caught cheating to the maximum extent.**

Grading: Everything in this course will be hand graded by chemistry graduate students and myself: quizzes, homeworks, and exams. I will hand out detailed answer keys for all the homeworks and exams. **Grading mistakes are occasionally made (but not on purpose).** It is ***your responsibility*** to ***carefully*** and ***promptly*** check your homework and exams for grading errors. This includes such mundane things as checking to see if the points are added up correctly. **I am MORE THAN WILLING and actually enjoy polite, logically constructed arguments (backed up with facts and a firm working knowledge of the answer key) about why my graders (or I) took too many points off and why you should get points back. I routinely give back many points under this situation. You have two weeks to bring an assignment back to me for a re-grade!!** So it is important that you pick up your assignment and answer key and review it **thoroughly and promptly**.

It is also critically important for you to carefully review *all* questions with the answer key (even the ones marked correct) and present your case for *all* questions that you have concerns with during your meeting with me. Depending on the situation, **during a re-grade I will consider taking points off for questions marked correct that are actually wrong!** I am usually nice about this (i.e., will not nail you for a wrong answer that wasn't marked wrong), but I have the right to ensure that all the grading is correct.

Material Covered in Class (outline – could change):

Thermodynamics

The Nature of Energy, The First Law of Thermodynamics, Enthalpy & Enthalpies of Reaction, Calorimetry, Hess's Law & Enthalpies of Formation, Second & Third Laws of Thermodynamics, Entropy & Entropies of Reaction, Gibbs Free Energy, Free Energy & Temperature, Free Energy & the Equilibrium Constant

Kinetics

Activation Barriers & Factors that Affect Reaction Rates, Reaction Rates, Temperature & Rate, Arrhenius equation, Concentration and Rate , Change of Concentration with Time, Reaction Mechanisms, Catalysis

Equilibrium

The Concept of Equilibrium, The Equilibrium Constant, Calculating Equilibrium Constants, Heterogeneous Equilibrium, Applications of Equilibrium Constants, LeChâtelier's Principle, Solubility Equilibria, Common Ion Effect,

Acid-Base Equilibrium

Acids & Bases, Brønsted-Lowry Acids and Bases, Autoionization of Water, The pH Scale, Strong Acids & Bases, Weak Acids & Bases, Relationship between K_a & K_b, Acid-Base Properties of Salt Solutions, Acid-Base Behavior & Chemical Structure, Buffered Solutions, Acid-Base Titrations,

Electrochemistry

Oxidation-Reduction Reactions, Balancing Oxidation Reduction Equations, Voltaic Cells, Cell EMF, Spontaneity of Redox Reactions, Effect of Concentration on Cell EMF, Batteries, Corrosion

Organic Chemistry

Organic line notation, ChemDraw, organic functional groups, organic nomenclature, fundamentals of organic reaction chemistry