

## Chem 253 – Introduction to Quantitative Analysis – Fall Semester 2006

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**Office:** Renfrew Hall (REN) Room 026A

**Office Hours:** M & F 2:30-4:30 or by appointment

**Textbooks:** *Quantitative Chemical Analysis, 6<sup>th</sup> Edition*, by Daniel C. Harris  
*Chem 253 Lab Experiments posted at the Chem 253 web Site*

**Introduction:** This course serves these primary purposes.

- **To expand your knowledge of aqueous equilibria** and to apply it to the determination of analytes in several types of samples. The concepts of chemical equilibria are important to the biological, geological, and environmental sciences. In some cases examples will be presented that discuss these applications.
- **To introduce you to methods and techniques of obtaining very accurate determinations** of materials by three different approaches: volumetric, gravimetric and spectrophotometric analyses. Learning to work quantitatively is a necessary skill for all scientists.
- **To help you develop as an independent learner and thinker.** As you leave the university, your progress as a professional will depend on your ability to keep up with advancements in your field. In most cases you will have to learn these new concepts on your own. You will find that the amount learning you have accomplished in a lifetime is done *post-graduation*. *A university education is therefore should not be a narrow vocational track, but an experience that teaches you how to appreciate and acquire new knowledge, ideas, and concepts on your own.*

**Key points for success in the course:**

- **It is strongly suggested that you work on homework problems on a daily basis.** This is important since the questions asked of you on the exams will not only test recall of knowledge but your **reasoning abilities**. Those abilities can only be developed by you with the assigned homework problems. I will spend most of each class period introducing you to a given topic. I will then assign a few homework problems on that topic at the course website.
- **Listening to lectures alone will NOT develop problem solving/reasoning abilities.** Working at a steady pace is important since the material takes awhile to assimilate into most minds. Attendance of lecture is required.
- **Attempting to “cram” Chem 253 material a few days before the exam will lead to disaster.**
- **Read your textbook on a regular basis.** Also, if you have missed, are deficient, and/or forgotten material from Chem 111/112 in many cases you be expected to learn this material on your own. Also you may see me or the TA's for further help.

- **Spend 1-3 hours of study time per lecture hours.** If you are rusty in algebra or have had Chem 112 more than two years ago you may find the need to spend more than three hours per lecture studying for this course.
- **Ask questions and participate in lecture.** Learning is not a passive experience. You must get over the feeling of intimidation when you must ask a question. This is important for your development as a professional. In many cases I will call on you in lecture for your input on topics and to answer questions. Names will be selected at random.
- **Expect to have work through problems on a chalkboard if you seek help.** This is to help you develop your reasoning abilities. Passively watching the TA's or myself will not help you problem-solving skills. Also, because of the time constraints, please note that neither the TA's nor I may be able to troubleshoot the algebraic steps you may have chosen for a particular problem. Alternative and simpler routes may be offered instead.

### ***Teaching Assistants***

- Each section has a different TA. If you have any questions on any material that you would prefer to ask your TA, please see him/her during their office hours in REN 049: If you can't make it to your TA's office hours, try to see one of the other Chem 253 TAs.

### ***Exams and Grading Policy***

- There will be three mid-term examinations and a nationally standardized, comprehensive final. All exams will be given in normal lecture periods in the Renfrew 127. Your final grade will be calculated in the following way:

3x50 minute exams	12.5% each	Exam 1 – September 13 <sup>th</sup> Exam 2 – October 11 <sup>th</sup> Exam 3 – November 15 <sup>th</sup>
10 Hand-in Assignments	12.5%	
Final	25%	10 – 12 am December 14 <sup>th</sup>
Lab	25%	

- **Excluding the ACS Final** the grades will be assigned as follows:

A: 100-82%	C: 66-57%	F: less than 45%
B: 81-67%	D: 56-45%	

- **Including the ACS Final** the grades will be assigned as follows:

A: 100-75%	C: 60-48%	F: less than 38%
B: 74-61%	D: 47-39%	

- **Mid-Term Make-up policy.** In the case of an acceptable University of Idaho *excused* absence\*, the weight of the other mid-terms and final exam will increase.

*\*An excused absence is defined by University of Idaho policy as a) an approved field trip or other official UI activity; b) confinement under doctor's orders; c) call to military duty; or d) leave of absence granted by student's academic dean.*

### **Reasonable Accommodations**

- Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodation(s) needed for the course. Late notification may mean that requested accommodations might not be available. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Rm. 333.

### **Calculator**

- An inexpensive calculator is required. You will need the calculator during labs and exams. It should have the capability for logarithms, exponentiation (antilogarithms),  $y^x$  and scientific notation operations. **TEXT ENTRY CALCULATORS WILL NOT BE PERMITTED TO BE USED DURING EXAMS.**

### **Hand-in assignments**

- You will be assigned a problem outside of your homework problem set that is to be turned in by the beginning of class on Fridays. There will be one per week except on exam weeks and the last week of classes. You are expected to turn in the exams in a **typed**, logical format in a way that can be easily understood. It would greatly benefit you if you were to use the formula editor of your word processor. I can help you with the MS Word formula editor.

### **IMPORTANT NOTICE**

- The final is a standardized **American Chemical Society** Quantitative Chemical Analysis examination. Everyone in the class is expected to take the exam at this time. No accommodation will be made for students who have made arrangements to leave Moscow by this time.