

Quantitative Analysis Lab

Chem 222

Course Date: Tues. Jan., 12, 2016 through Thurs., April., 28, 2016

Location: Fulmer 207

Meeting day: Tues and Thurs

Meeting Time: Section 1: 2:50- 5:40 PM

Prerequisite(s): Chem 220 with a C or better or concurrent enrollment

Instructor Information

Prof. Jeremy Lessmann

Email: jlessman@wsu.edu

Office: Fulmer 311

Office Hours: By Appointment or Tues/Thurs 9:30-10:30 or Fri 1-2

Phone: 509-335-2098

TA: TBA

Highly Recommended textbook: Quantitative Analysis, Daniel Harris, 8th ed or 9th ed.

Course Requirements:

Chem 222 is an intensive, hands on laboratory course. Your ability to obtain accurate and/or precise results is a key factor in measuring your success in the course. In cases where group work is required, the effort of each individual will be taken into account when assigning grades.

Required Materials

1. Scientific Calculator
2. Approved Safety Goggles
3. Lab coat
4. Duplicating Notebook
5. Access to Personal Computer
6. USB thumbdrive

Student Learning Outcomes: (Chemistry Dept. Outcomes in ())

At the end of this course student will:

1. Be familiar with performing the most common forms of chemical analysis to quantify an unknown chemical compound. Techniques include gravimetric analysis, titrations, atomic and molecular optical spectroscopy, chromatography, and potentiometric measurements. **(2,7)**
2. Practice and become comfortable with basic statistical analysis of data including the proper use of averages, standard deviations, propagation of error and errors in calibration curves. **(2,5,7)**
3. The proper experimental setup and use of calibration curves, standard addition curves and internal standard methods to quantify unknowns. **(5)**
4. Proper preparation of solutions for chemical analysis especially the preparation of solutions with accurately known concentrations and the dilution of solutions to useful concentration ranges. This includes the use of commonly encountered laboratory equipment. **(1,5)**
5. Experience in the application of chemical equilibrium to solving practical chemical problems. **(1,2,7)**
6. The appropriate writing of a chemical report. **(4,7)**

Assessment of Learning Outcomes:

Assessments of the above learning outcomes are provided for in the student prepared laboratory reports.

Lab Schedule

Tues Jan 12 Intro and start of Statistics/Error Lectures.

Thurs Jan 14-Tues Jan19 Statistics Lectures

Thurs Jan 21 Lab orientation and check in

Tues Jan26 Experiments begin: Specific schedule for the 12 labs is posted on Blackboard.

Tues March 14-thurs March 16 No Lab Spring Break

Tues April 26 -Thurs April 28 Lab Practical exam

Lab Reports:

Reports are due as stated in the due dates page in the Lesson section on Blackboard. Points will be deducted from late work at a rate of 10% per day late. NO EXCEPTIONS. Reports more than 1 week late will not be accepted unless prior arrangements are made with the TA (NOT the Instructor).

Grading Policy

Accuracy : Approximately 10% of your lab summary grade for selected experiments will be based on the accuracy of your results. Specific ranges are in a table in the lab manual.

Evaluation :

Statistics Assignment 150 pts

Prelabs 400 pts (including Formals)

Project Summary/ Lab Notebook 800 pts (includes Formals)

Formal Reports 3@ 50 pts

Lab Practical 200 pts

Total Possible 1700 pts

+ and - grades will be give within each grade range (i.e A, B C etc.). Standard Grade Cutoffs are used. (The instructor reserves the right to lower cutoffs)

Academic Integrity: I encourage you to work with classmates on assignments and you will be working with partners for some experiments. However, each student must turn in original work. No copying or sharing of spreadsheets will be accepted. Students who violate WSU's Standards of Conduct for Students may receive an F as a final grade in this course, will not have the option to withdraw from the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist

Safety and Emergency Notification

Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (<http://safetyplan.wsu.edu/>) and visit the Office of Emergency Management web site (<http://oem.wsu.edu/>) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.