

Instrumental Analysis Lab

Chem 426

Course Date: Tues. Aug., 23, 2016 through Thurs., Dec., 8, 2016

Location: Fulmer 219

Meeting day: Tues and Thurs

Meeting Time: 1:25 to 4:15 PM

Prerequisite(s): Chem 425 with a C or better

Instructor Information

Prof. Jeremy Lessmann

Email: jlessman@wsu.edu

Office: Fulmer 311

Office Hours: By Appointment

Phone: 509-335-2098

TA: TBA

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

At the end of this course student will:

1. Gain experience in operating the most commonly encountered laboratory instrumentation for chemical analysis. **(2,5)**
2. Experience determining the most useful Figures of Merit for instrumentation. **(2,3)**
3. Gain experience in designing experiments and perform the 3 common methods of quantitative analysis using instruments. **(3,5)**
4. Further practice in the appropriate statistical analysis of data. **(3)**
5. Further experience in the communication of experimental results in the proper written formats for Chemistry **(4)**

Assessment of Learning Outcomes:

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

Lab Schedule

Tues Aug 23 Intro and start of Electrochem lectures.

Thurs Aug 25-Thurs Sept 1 Electrochem Lectures

Tues Sept 6 Experiments begin: Students will be rotating through 7 experiments over the rest of the semester

Each experiment should take 3 lab periods. Specific schedule will be discussed on the first day.

Tues Nov 22-24 No Lab Thanksgiving Break

Thurs Dec 8 Cleanup and checkout day

General Lab Experiments and Lab Report Requirements:

Students will work individually. The following figures of merit must be determined in addition to any other requested analysis for a given experiment:

Figures of Merit Checklist:

1. Calibration plot or standard addition plot, or internal standard data
2. Equation of calibration or standard addition with std. devs. of slope and intercept, statistical data for internal standard analysis
3. Table of true concentrations (standards and pseudo-unknown), estimated concentrations with std. devs. (from equations not repeat trials), and RSD's.
4. Sensitivity
5. Detection limit
6. Spectrum, chromatogram, voltammogram or whatever is appropriate for the instrument, printed from Excel and in proper format for publication in the ACS Journal *Analytical Chemistry* (Consult the Instructions for Authors on the ACS website)

Grading Policy: You must turn in a report for every experiment to be eligible to pass the course.

Assignment	Possible Points	Percent of Grade
Experiment reports (7@ 50)	350	70 %
Lecture Problem sets (2@25)	50	10 %
TA and Instructor Assessment	Lab Notebook and Recordkeeping 50	10 %
	Technique 50	10 %
Total points possible	600	100%

Standard percentages will be used to calculate letter grades.

General Rubric for Lab reports: (This will be modified to meet specific experiment circumstances)

Name:

	Experiment	Possible Points	Points Earned
1)	Grammar etc	5	
2)	Intro – Explain instrumentation	10	
3)	Data – Print graphs etc including Figures of Merit	20	
4)	Questions answered from lab/Conclusions	10	

Total:

50 pts

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

Academic Integrity: I encourage you to work with classmates on assignments. However, each student must turn in original work. No copying will be accepted. Students who violate WSU's Standards of Conduct for Students will 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

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.