

Chemistry 368 Syllabus

Spring 2009
Instrumental Analysis Lab

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Office Hours
Mon 10:00-11:00
Mon 1:00-1:50
Wed 1:00-1:50
Th 11:00-11:50
Fri 1:00-1:50

Schedule: Lab is scheduled for W 2:00 to 4:50 in KB 435 and 437.

Textbook: Laboratory Manual, Laboratory Notebook,

Course Description

CHEM 368 INSTRUMENTAL ANALYSIS LAB This laboratory will focus on the optimization and application of different instrumental techniques, including computer interfacing, spectroscopy, chromatography, and electrochemistry. Emphasis is placed on instrumental techniques used for environmental and clinical applications. Computers will be used extensively for analyzing and presenting data. Corequisite CHEM 366. 3 laboratory hours. 1 semester hours

Goals

1. Students will be able to compare and contrast instrumental techniques including the following:
 - o Atomic Absorption
 - o Graphite Furnace AA
 - o Gas Chromatography
 - o Liquid Chromatography
 - o Fourier Transform Infrared
 - o Ultraviolet/Visible
 - o Fluorescence
 - o Mass Spectrometry
 - o Nuclear Magnetic Resonance
2. Students will be able to describe the function and purpose of the following components of an instrument
 - o Sources
 - o Sample Introduction
 - o Wavelength Selectors
 - o Detectors

- Injectors
 - Columns
 - Phases
 - stationary
 - mobile
 - Electrodes
3. Students will be able to identify an instrumental method to provide needed information
 4. Students will be able to develop a procedure that includes the following:
 - Sample preparation
 - Calibration
 - Standardization
 - Standard Addition
 - Internal Standard
 5. Students will be able to interpret experimental data
 - Statistics
 - Propagation of error
 6. Students will be able to make a conclusion based upon experimental results
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Schedule:

Week	Date	Lab Activity
1	1/14/09	Lead Paint Methods and experiment design
2	1/21/09	Lead Paint Prep
3	1/28/09	Lead Paint
4	2/4/09	Aspirin UV/Vis prep
5	2/11/09	Aspirin UV/VIS
6	2/18/09	Aspirin Complex prep
7	2/25/09	Aspirin Complex
8	3/4/09	Spring Break
9	3/11/09	Aspirin Fluorescence prep
10	3/18/09	Aspirin Fluorescence
11	3/25/09	Aspirin LC prep
12	4/1/09	Aspirin LC
13	4/8/09	GC prep
14	4/15/09	GC
15	4/22/09	MS prep
16	4/29/09	MS

Attendance:

You are expected to attend lecture. Lecture will supplement the textbook and a significant amount of time is spent working problems.

Grading:

+/- grades are used. A separate grade will be given. Your grade for the semester is based upon performance on the following:

Lab reports are due 1 week after the experiment is completed. 10% will be deducted from ALL late work. Work will not be accepted after 1 week from the due date. At the instructors discretion, students may be required to redo any graded work for a 10% penalty. The redo will be due one week after receipt.

1. Lead Paint
2. Aspirin UV/VIS
3. Aspirin Complex
4. Aspirin Fluorescence
5. Aspirin LC
6. Aspirin Long Report
7. Gas Chromatography
8. Mass Spectrometry

Make Up Labs:

- a. If you have advance notice of an absence you must make arrangements with the instructor before the lab. Failure to do so will result in a ZERO for the exam.
- b. If you are unable to attend lab and do not have advance notice you must; have an acceptable and documented excuse, be prepared to document your absence, and contact the instructor **before** the next class meeting.
- c. Undocumented or unacceptable absences result in a zero on the lab

Cheating and Plagiarism:

Cheating and Plagiarism will not be tolerated and are grounds for FAILURE in the course. The University's policy on cheating and other forms of academic fraud will be strictly enforced. When in doubt about what is acceptable, ask the instructor. You will do some work in small groups and interaction is strongly encouraged in this setting. You, however, are ultimately responsible for the material. Working together on homework problems is acceptable, but **you must reference other people's ideas**. Quiz's and Exams must be your own work. You are allowed to use a calculator and a pen or pencil for quizzes and exams. No other materials are allowed. For additional information read "[What is Plagiarism](#)". A copy of the appeal procedure for student academic grievances is available in the Science Division office.

Office Hours:

I will be available in my office during scheduled office hours. Any changes in these hours will be posted on my office door and on the Web site. At other times I am happy to help you, if I have

time. Feel free to call and make an appointment if you need extra help. You are strongly encouraged to ask questions and seek help early. Chemistry is challenging. When you do not understand something, ask.

WWW:

Supplementary course material and a listing of course topics is posted on the WWW <http://science.widener.edu/~svanbram>.

Syllabus Modification:

Any Modification of this syllabus will be distributed in class and posted on the web.