CHEM 155L – INSTRUMENTAL ANALYSIS LAB
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Spring 2005

Class Meetings / Office Hours:
Laboratory: T or Th 09:00-11:50 a.m. DH-010
Office Hours: T and Th 1:00 – 2:30 or by appointment DH-004

Lab Notebook: A quadrille ruled notebook with numbered carbon copy pages is required. Guidelines for the proper maintenance of a laboratory notebook are the same as those for chemistry 55. Carbon copies of notebook pages will be collected after each lab.

Laboratory Manuals: Laboratory procedures are under revision and will be distributed at the beginning of classes during the semester.

Objectives: In the laboratory, students will implement, document in a laboratory notebook and formally report chemical analyses based on atomic absorption spectrometry, and high-performance liquid chromatography. Documentation and short reports will be filed for ultraviolet-visible spectrometry, infrared spectrometry and a Fluorescence or Raman spectroscopy experiment. A major goal of these experiments is to attain a detailed and fundamental understanding of the measurement process and instrument function.

There will be two experimental projects with formal reports, and four shorter analyses. In the former projects, students will a, determine the Cu and Fe content of vitamin pill samples using atomic absorption spectrophotometry and b, simultaneously determine the caffeine and benzoic acid concentration in diet Coke or Pepsi. Both experiments will involve the preparation and analysis of calibration and validation standards as well as sample preparation steps. In the less extensive reports, students will a, analyze plastic film unknowns by FTIR and UV-Vis spectrometry, b, analyze a cigarette smoke sample with Infrared spectrophotometry, c, set-up and calibrate a simple laser-absorbance spectrometer and d, analyze data from a GC-Mass spectrometer, and determine the composition of a chemical mixture by analysis of the UV spectrum.

For each instrument, the objectives will be to understand the a. principles of function, b. practical aspects of operation and c. the implementation of a proper quantitative analysis with the particular instrument. Guidance will be provided for the preparation of the formal reports; the short reports will be based on printouts from the instruments and lab report forms.
Laboratory Grade: (Approximately 40%-50% of the total course grade – see Dr. Pesek for more details.) This will be based on reports, laboratory notebook and instructor evaluation. Details on the format and content of the reports and notebook will be provided.

Laboratory Grade: 370 points
- Trace Metal Analyses: 100 points
- Liquid Chromatography Analysis: 100 points
- FTIR, Laser, Mass Spec Reports: 120 points
- Notebook and subjective evaluation: 050 points

Due Dates and Policy on Late Work
Lab reports are due at the beginning of lab on the due date. Because people will be working on different labs at the same time, lab report grading may lag the submission significantly. The timing of report grading will be at my discretion because I will need to collect a sufficient number of a given report to ensure that I can grade them together, and therefore grade them uniformly. The limited number of instruments available requires that we run different experiments concurrently.

Lab reports will be accepted late, i.e. at the next lecture section, but will be penalized 3% if the due date was Tuesday, but the report was turned in on Thursday, and 7% if the report was due Thursday, but was turned in on Tuesday and 10% per week thereafter.

Drop Policy:
The deadline to drop classes without a W is Monday, February 14th. This is also the deadline to file academic renewal petitions as well as credit/no credit and audit requests. After the regular drop period ends, only documented medical or similar emergencies will be accepted as a valid reason to drop a course. Note particularly that a change in work schedule is no longer an acceptable reason. Therefore, it is critical that you inform your employer that you have a serious commitment for your scheduled class and laboratory times during the whole semester. If your employer cannot guarantee that you can meet this obligation, then you should drop the class in order to allow someone who can fulfill this commitment to register. Also, be aware of the fact that “unsatisfactory performance in course work and protection of your GPA is not a serious and compelling reason in itself for requesting permission to drop”. After the twentieth day of instruction, all petitions to drop classes or withdraw from school will be reviewed by the Director of Academic Services. Petitions are available in the Student Resource Center.
ADDENDUM TO ALL CHEMISTRY DEPARTMENT GREENSHEETS
(Except Chem 291 Sections)

Revised August 2002

CHEMICAL SAFETY – all courses

Chem 120S is a required course for all chemistry majors and minors and a prerequisite for all Chem 180/298 research.

EMERGENCIES AND EVACUATIONS – all courses

If you hear a continuously sounding alarm, or are told to evacuate by Emergency Coordinators (colored badge identification), walk quickly to the nearest stairway (end of each hall). Take your personal belongings, as you may not be allowed to immediately return. Follow instructions of Emergency Coordinators. Be quiet so you can hear. Once outside, move away from the building. Do no return to the building unless the Police or Emergency Coordinators announce that you may.

DISABLED STUDENTS – all courses

Any student with a pre-existing disability requiring an accommodation (as documented by the Disability Resource Center) should make this need known to the instructor during the first two weeks of classes. Every effort will be made to accommodate your needs.

ACADEMIC DISHONESTY – all courses

Academic dishonesty of any sort will subject the involved person(s) to university mandated consequences. You should be familiar with the section of the SJSU Catalog entitled “Policy of Academic Dishonesty” (pp.448-449 in the 2002/04 Catalog). Incidents of academic dishonesty may be referred to the Chief Judicial Affairs Officer of the University and reports may be placed in Department and /or University files.

For courses with written assignments include:
Note in particular that plagiarism, word-for-word copy of another person’s words without proper attribution (quotation marks and a clear literature reference), is a particularly serious form of academic dishonesty.

LABORATORY SAFETY – all laboratory courses

You should read the safety section of the SJSU Catalog under Chemistry Department (page 136 of current 2002/04 Catalog). Note in particular: “Failure to comply with proper procedures and prescribed safety cautions shall subject the student to disciplinary action. 1) Any student who engages in unauthorized experimentation, or who seriously disregards safety, thereby endangering self or others shall be withdrawn immediately from the class with a grade of F. 2) Any student who show persistent disregard for safety may have his/her grade lowered, and may risk being withdrawn with a final grade of F.”