

ANALYTICAL CHEMISTRY 4212
INSTRUMENTAL METHODS LABORATORY
SYLLABUS FOR BOTH SECTIONS, SPRING 2015

SCHEDULE: Both Sections meet together for the Prelab on Mon 1:30 to 2:30 PM
The Wet Lab for Section **21512** meets on Mon 2:30 to 5:20 PM
The Wet Lab for Section **22754** meets on Tues 1:30 to 4:20 PM

ROOM: Prelab = CCSB G.0714 or where announced in class.
Wet Lab = CCSB G.0714,

INSTRUCTOR: Dr. Saupe, Office CCSB 2.0116

OFFICE HOURS: Same as lecture

TEACHING ASSISTANT: Ms. Tahmina Akter

REQUIRED MATERIALS AND PREREQUISITES: There is no lab manual to purchase. Class Handouts. See safety section. Bring calculator, pencil/pen, and lab notebook to every class.

This laboratory course is a co-requisite and supplement of the lecture course CHEM 4211. CHEM 3310 and CHEM 3110 are prerequisites to this course. If you have received special permission, from the *Chemistry Undergraduate Adviser*, to take this course without having the prerequisites, then you are responsible for the materials and knowledge (from CHEM 3310 and 3110) that is assumed that all students possess when taking this course. By taking this course you accept this responsibility.

Stipulations in this syllabus are subject to change.
All changes will be discussed during class.

OBJECTIVES:

Students will experience the use of analytical instrumentation for the purpose of chemical analysis, and students will become familiar with the methods and theory of operation for each instrument. This laboratory course is a co-requisite and supplement of the lecture course CHEM 4211. Instrumentation covered may include UV-VIS, IR, ICP-OES, FAAS, GFAAS, ion-selective electrodes, GC, HPLC, mass spectrometry, as well as others.

LABORATORY REPORT REQUIREMENTS:

Written reports on the labs performed will be due one week after they are performed, at the beginning of the wet lab exercises for that week. Late reports will not receive full credit. **Reports more than 1 week late will not be accepted and will receive a zero.** Lab reports that are 2 days late will receive a 20 % reduction in grade. Lab reports between 2 days and one week late will receive a 50 % reduction in grade. You are expected to write-up your own individual lab reports. Write your own words.

Excellent lab reports should contain (and will be graded with respect to) the following parts.
Any words, tables or graphics that are not your own creation must be referenced properly.

1. Your name and your lab partners' name clearly identified (as partner) and the date performed.
2. The title of the report descriptive of the experiment.
3. A clearly referenced procedure statement with a copy of the procedure attached.
Clearly state any changes made to the standard procedure referenced.
4. A short **but complete** and logical statement stating the objective of the experiment.

5. A drawing (neat hand drawings are OK) **and description** of the basic theory of operation of the instrument or technique used. Any words, tables or graphics not your own must be referenced properly.
6. A section on the chemicals used, their structure and intrinsic qualities (formulas, molecular weight, concentration, solvent, toxicity, color, powder or granular?, etc. No web links please.
- 7a. Data, numerical analysis, graphs, tables, etc. Show appropriate calculations and **clearly identify important answers**. Always show units and use them in your calculations.
- 7b. **Summary statement** about the data found and the **result determined clearly stated**.
8. A conclusion statement *restating the result* and summarizing any conclusions about the experiment (including the changes made to the procedure), and its utility for doing the chosen analysis. Include any observations or suggestions.

ATTENDANCE POLICY:

You must be present during each prelab and each lab experiment to be eligible for a grade on that experiment. You are required to write-up your own individual lab reports. Any missed labs or prelabs will result in a grade of zero on that lab. You will be able to drop one lab report grade. **Make-up labs will not be given.** Attendance at the lecture portion of the lab is mandatory (prelab). The prelab lecture will start at 1:30 PM each week on Mondays and last about 50 min. You will be tested on the prelab lecture and lab experiment material.

Arriving late to the prelab lecture will make you miss the quizzes. Please be on time.

TESTING AND GRADING:

Quizzes on the course content will be given at the beginning of every prelab lecture.

Lab Reports:	80%
Quiz avg:	10%
Final Exam	10%

SAFETY:

Safety protocols are very important part of the course content and will be discussed in class. In general, you are required to wear proper attire in the laboratory. For each lab you will need to wear safety eye wear, long pants, and full cover shoes (no sandals). Rubber gloves will be provided. You need to wear lab coats, so bring your own. Read, sign, and return the safety agreement page given to you at the beginning of the semester. Please observe all safety requirements that have been explained to you in your previous lab courses at UTEP. If you have any questions about determining correct safety protocols, please ask the instructors.

LABORATORY EXPERIMENTS:

Experiments for this course are defined on separate documents and will be provided as needed.

DISABILITIES: If you have a disability that may affect your performance of the assigned laboratory lessons, you must register with the University's office and give proper notification to the instructor of this course within two weeks of the beginning of the semester. Special arrangements can only be made under these circumstances.

This is a course designed for undergraduate students. Graduate students taking this course for graduate credit under a special arrangement with the Department of Chemistry graduate adviser will need to complete special assignments, which are in addition to the regular work assigned in this course. The additional assignments may include (1) the writing of a research report on the topic and length designated by the instructor, and (2) the completion of extra problem sets done as homework assignments, (3) some other arrangement or experiments. In general, these problem sets will be more advanced or more extensive than those found in the undergraduate homework assignments. Graduate students with knowledge or experience on topics relevant to the class may be asked to share that information with the class.