



INSTRUMENTAL METHODS III: SPECTROSCOPY (CHEM 4190/6190 Lab 3 credit hours)

Georgia State University

Instructor: Dr. Yao Xin (E-mail: yxin3@gsu.edu)

Lecture Time and Location: Tuesdays, 1:00 to 4:15 pm, Kell Hall 698

Office Hours: Tuesdays, 11:45 am to 12:45 pm, or by appointment.

Office: Langdale Hall 924

Graduate Teaching Assistant: Beatrice Edjah (bedjah1@student.gsu.edu)

Lab Coordinator: Dr. Yanyi Chen (ychen46@gsu.edu) Kell Hall 694

Prerequisites: CHEM 4000 and CHEM4120 with grade of C or higher

Course Objective:

Gain hands-on experience in operating and analyzing data using different spectrometers to carry out research projects. Learn to write ACS-style laboratory reports.

Course materials:

A laboratory manual will be provided at the check in date.

Recommended (but not required) text book: *Principles of Instrumental Analysis* by Skoog, Holler and Crouch, 6th edition (2007), Cengage Learning, Independence, KY.

Class Attendance: Students are required to attend all laboratory sessions including a pre-lab lecture. State law also requires that you sign in and out of each laboratory.

Laboratory Notebooks:

A bound (stitched, not spiral or loose-leaf) notebook is required to record data and observations taken by your group in all laboratory sessions. If other group members prepare a sample, run the spectrum, state the fact by recording other group member's name with the work. Your notebook should have records for all spectra presented, discussed, or reported as data in your formal laboratory reports. In addition, when you turn in any laboratory report, the corresponding section of your notebook must be complete. Instructors may spot check your notebook. If the

notebook does not have complete data for a submitted report, your grade for the corresponding report will be lowered up to 10%. Graded notebooks can be picked up within one week after final semester grades are due at the registrar's office outside of the instructor's office. After this time, they will be discarded.

Safety is the first priority in the laboratory. State law requires that you wear regular glasses or safety glasses as part of your personal protective equipment at all times while in the laboratory.

Contact lenses should not be worn. However, you can fill out a waiver of you right to sue Georgia State University and then wear them with safety glasses at your own risk. Students are also reminded to dress appropriately: no open-toe shoes (flip-flops, sandals, crocs, etc.); no shorts/skirts. No food, drink, gum, etc. is allowed.

Grading and assessments:

Lab reports and notebook 30%, and an extra 3% for three (3) pre-lab lecture quizzes

Lecture Quizzes & Final Exam 70%

Laboratory report requirements:

CHEM 4190: 3 reports (UV/IS, fluorescence and FT-NMR spectroscopy) are required with each counted 10% of the total grade for the course. The FT-IR report is optional. If all four reports are submitted instead of three, the best three scores are counted in the final lab grade.

CHEM 6190: 4 reports (UV/IS, fluorescence and FT-NMR spectroscopy, FT-IR) are required with each report counted 7.5% of the total grade for the course.

Students should analyze the data and write each report independently while work in groups. Copying other student's data/discussion in the report without attribution is plagiarism. Such report will receive a zero score and the student will be reported to administration for disciplinary action. If the report is not turned in on time, 5% off for each past-due day. Reports over 2 days overdue will not be accepted for grading. Reports are due on the dates indicated in the schedule.

Chemistry Department's Student Integrity Policy:

All assignments including lab reports, exams and tests taken must represent your individual, unaided efforts. Receiving unauthorized outside information or offering unauthorized information to another student during an examination is cheating.

Any suspected offenses may be reported to the Department of Chemistry and the College of Arts and Sciences for appropriate action.

Withdraw:

The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or her designee), give a WF to all students who are on their rolls but are no longer taking the class and report the last day the student attended or turned in an assignment.

Tentative Schedule:

8/22/2017 Lab 1 Check In, safety training, safety exam

8/29/2017 Lab 2 UV/VIS Part A

9/5/2017 Lab 3 UV/VIS Part A

9/12/2017 Lab 4 Quiz 1, UV/VIS Part B

9/19/2017 Lab 5 UV/VIS Part B

9/26/2017 Lab 6 Catch up

10/3/2017 Lab 7 (Report #1 due) Fluorescence

10/10/2017 Lab 8 Quiz 2, Fluorescence

10/17/2017 Lab 9 Catch up

10/24/2017 Lab 10 (Report #2 due) FT-NMR

10/31/2017 Lab 11 Quiz 3, FT-NMR

11/7/2017 Lab 12 IR

11/14/2017 Lab 13 (Report #3 due) Catch up

11/28/2017 Lab 14 (Report #4 due) Check out