

CHM 4130, Instrumental Analysis

Fall 2020

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Office Hours: Whenever the door is open

Teaching Assistant: Thomas "Tyler" Galiber tgaliber@chem.ufl.edu
Office Hours: ?????

Course time: M/W/F 9:35-10:25, LEI 242

Optional textbook:
Fundamentals of Analytical Chemistry 9th Edition Skoog, West, Holler and Crouch

A full Analytical textbook is also available at
http://dpuadweb.depauw.edu/harvey_web/eTextProject/version_2.1.html

Objectives:

Delve further into Analytical Chemistry, placing more focus on instrumentation and covering more exotic and specialized methods of analysis.

Participation

Regular attendance at all class meetings and participation during lectures is expected. The Professor and TA reserve the right to incorporate participation as a part of the grade. All cell phones should be put on vibrate or silent before entering the classroom.

Problem Sets

Four problem sets will be assigned during the semester. Completed problem sets must be turned in at the beginning of the lecture period on which they are due. Late sets are accepted with a valid excuse. Unexcused late assignments will be counted late and lose 10% per day. *It is expected that students submit professional quality (hand written) work, organized neatly and arranged in such a way as to provide evidence of a clear thought process in solution of problems. Problem sets which are sloppy, disorganized, or late will not be accepted for grading.* Solutions will be made available on a per student basis by request during office hours. Each problem set is worth 25 pts (for a total of 100, or 10% of final grade).

Examinations

Three regular examinations will be given, as indicated in bold on the schedule below, in class. Each is worth 100 points. The comprehensive final (sorry...) is

also worth 100 points. Exams will be in the evening, but not at the normal University time because that is way too late. We will discuss this on the first day. Because of scheduling, some students will not be able to take some exams during the scheduled exam time. In this case students will be allowed to take an exam early during a separately scheduled time prior to the scheduled exam. A student who has taken an exam early must not communicate information on an exam to another student. Graphing calculators are allowed during the exam, but must have their memories erased prior to the start.

Departmental Seminars

Students enrolled in CHM 4130 may earn extra credit by attending Analytical seminar and submitting a 100-word summary that describes the seminar. A maximum of 4 seminars may be attended for extra credit (though you are welcome to attend more). Each seminar is worth 6.25 pts, for a total of 25 pts with all 4.

Academic Dishonesty

Students are expected to observe high standards of intellectual integrity and honesty. Plagiarism of the work of fellow students or authors, and cheating on exams are a discredit to you, your fellow students, and your university. Copying the work of fellow students invokes severe penalties, and academic dishonesty or incivility will not be tolerated in any form. Students found to be engaging in this type of activity will be dealt with according to the Student Honor Code. ***The standard minimum penalty for academic misconduct is a zero on the assignment or outright failure in this course.***

<https://sccr.dso.ufl.edu/process/student-conduct-code/>

DRC Accommodations

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

Grades

The course grade is based on the total 500 points. Students on the borderline between two letter grades (e.g., B+ and A-) will benefit from extra-credit and participation (see above).

<u>Category</u>	<u>Possible Points</u>
Problem Sets	4·25 pts
Exam 1	100
Exam 2	100
Exam 3	100
Final	<u>100</u>
Total	500

<u>Letter Grade</u>	<u>Percentage</u>	<u>Letter Grade</u>	<u>Percentage</u>	<u>Letter Grade</u>	<u>Percentage</u>
A	≥93	B-	≥80	D+	≥67
A-	≥90	C+	≥77	D	≥64
B+	≥87	C	≥73	E	<60
B	≥83	C-	≥70		

Tentative Schedule

<u>Date</u>	<u>Topic</u>	
1/6 (M)	Course introduction; The Analytical Method	
1/8 (W)	Intro to Optical Spectroscopy	
1/10 (F)	Intro to Optical Spectroscopy	
1/13 (M)	Components of Optical Instruments	
1/15 (W)	Components of Optical Instruments	
1/17 (F)	Components of Optical Instruments	
1/20 (M)	No Class (MLK Jr Day)	
1/22 (W)	UV-Vis	
1/24 (F)	UV-Vis IR	
1/27 (M)	Atomic Absorption	
1/29 (W)	AA & Atomic Emission	
1/31 (F)	Atomic Emission	
2/3 (M)	Luminescence	
2/5 (W)	NMR	
2/7 (F)	Review for Exam 1	Homework 1 Due
2/10 (M)	Intro to Separations	
2/12 (W)	Intro to Separations	Exam 1
2/14 (F)	Guest Lecturer: Jonathan Sweedler, University of Illinois	

2/17 (M)	Paper and Thin-layer Chromatography	
2/19 (W)	Liquid Chromatography	
2/21 (F)	Liquid Chromatography	
2/24 (M)	Gas Chromatography	
2/26 (W)	Gas Chromatography	
2/28 (F)	Capillary Electrophoresis	
3/2 (M)	Spring Break	
3/4 (W)	Spring Break	
3/6 (F)	Spring Break	
3/9 (M)	Capillary Electrophoresis	
3/11 (W)	Ion Mobility Spectrometry	
3/13 (F)	Microfluidics	Homework 2 Due
3/16 (M)	Review for Exam 2	
3/18 (W)	Introduction to Mass Spectrometry	Exam 2
3/20 (F)	Introduction to Mass Spectrometry	
3/23 (M)	Mass Spec ionization sources (small)	
3/25 (W)	Mass Spec ionization sources (small)	
3/27 (F)	Mass Spec ionization sources (large)	
3/30 (M)	Mass Spec ionization sources (large)	
4/1 (W)	Mass Analyzers Part 1	
4/3 (F)	Mass Analyzers Part 2	
4/6 (M)	Mass Detectors	
4/8 (W)	Review for Exam 3	Homework 3 Due
4/10 (F)	Interpreting EI mass spectra	
4/13 (M)	Interpreting EI mass spectra	
4/15 (W)	Interpreting ESI mass spectra	Exam 3

4/17 (F) Review for Final

4/20 (M) Review for Final

Homework 4 Due

Final 4/28

7:30AM-9:30AM