

CHM 4130, Instrumental Analysis Spring 2021

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Office Hours: By Zoom, Friday 12:30-1:30 pm

Teaching Assistant: Tong Huang tonghuang@chem.ufl.edu
Office Hours: TBD

Course time: M/W/F 10:40 am-11:30am
CLB130 (See below for COVID-19 protocol)

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.

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

Exams will be take home exams. On the day of the exam, the exam will be posted on Canvas. You will have 1 week to complete the exam and submit it on Canvas. The exam is all short answer style questions. The exam is open

note and you will have access to any resource you want. However you cannot ask another person for help or work with others.

COVID-19 Protocol

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions:

You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals at minimum, 8+ preferred) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations. Every other row should be vacant, with 2 being optimal.

Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.

Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.

Absence:

If you know ahead that you will have to miss lecture, notify your TA and Dr. Jacobs in advance. If you are sick and cannot reach anyone before lecture, please let us know at your earliest convenience. If you are not feeling well, do not come to lecture.

- a) If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.](#)
- b) Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. [Find more information in the university attendance policies.](#)

Academic Dishonesty

The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that

facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors or TAs in this class. The sale or transfer of graded or ungraded course materials to another student for use in this course (current or future semesters) is in violation of the Honor Code. All violations will be reported.

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.

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

<u>Date</u>	<u>Topic</u>	
1/11 (M)	Course introduction; The Analytical Method	
1/13 (W)	The Analytical Method continued	
1/15 (F)	Intro to Optical Spectroscopy	
1/18 (M)	No Class (Martin Luther King Jr. Day)	
1/20 (W)	Intro to Optical Spectroscopy	
1/22 (F)	Components of Optical Instruments	
1/25 (M)	Components of Optical Instruments	
1/27 (W)	UV-Vis	
1/29 (F)	UV-Vis IR	
2/1 (M)	Atomic Absorption	
2/3 (W)	AA & Atomic Emission	
2/5 (F)	Atomic Emission	
2/8 (M)	Luminescence	
2/10 (W)	NMR (Guest Lecturer Dr. Ali Arvij)	
2/12 (F)	Catch up day if needed	Homework 1 Due
2/15 (M)	Review for Exam 1	
2/17 (W)	Intro to Separations	Exam 1
2/19 (F)	Intro to Separations	
2/22 (M)	Paper and Thin-layer Chromatography	
2/24 (W)	Liquid Chromatography	Exam 1 Due
2/26 (F)	Liquid Chromatography	
3/1 (M)	Gas Chromatography	
3/3 (W)	Gas Chromatography	
3/5 (F)	Capillary Electrophoresis	
3/8 (M)	Capillary Electrophoresis	
3/10 (W)	Ion Mobility Spectrometry	

3/12 (F)	Microfluidics	Homework 2 Due
3/15 (M)	Review for Exam 2	
3/17 (W)	Introduction to Mass Spectrometry	Exam 2
3/19 (F)	Introduction to Mass Spectrometry	
3/22 (M)	Mass Spec ionization sources (small)	
3/24 (W)	Mass Spec ionization sources (large)	Exam 2 Due
3/26 (F)	Mass Spec ionization sources (specialized)	
3/29 (M)	Mass Analyzers Part 1	
3/31 (W)	Mass Analyzers Part 2	
4/2 (F)	Mass Detectors	Homework 3 Due
4/5 (M)	Review for Exam 3	
4/7 (W)	Interpreting EI mass spectra	Exam 3
4/9 (F)	Interpreting EI mass spectra	
4/12 (M)	Interpreting ESI mass spectra	
4/14 (W)	Review for Final	Exam 3 Due
4/16 (F)	Review for Final	
4/19 (M)	Final Posted in Canvas	Homework 4 Due
4/26 (W)	Final Exam Due on Canvas	