

CHM 4130, Instrumental Analysis

Fall 2020

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Office Hours: By Zoom, email to request a time

Teaching Assistant: Jonathan Specker jspecker@chem.ufl.edu
Office Hours: TBA

Course time: M/W/F 8:30-9:25
Monday and Friday are synchronous. Wednesday is asynchronous

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.

Notice About the Lectures:

Our class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded.

If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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 Code of Academic Ethics described in the Schedule of Classes. ***The standard minimum penalty for academic misconduct is a zero on the assignment or outright failure in this course.***

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	<u>500</u>

<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>	
8/31 (M)	Course introduction; The Analytical Method	
9/2 (W)	Intro to Optical Spectroscopy	
9/4 (F)	Intro to Optical Spectroscopy	
9/7 (M)	No Class (Labor Day)	
9/9 (W)	Components of Optical Instruments	
9/11 (F)	Components of Optical Instruments	
9/14 (M)	Components of Optical Instruments	
9/16 (W)	UV-Vis	
9/18 (F)	UV-Vis IR	
9/21 (M)	Atomic Absorption	
9/23 (W)	AA & Atomic Emission	
9/25 (F)	Atomic Emission	
9/28 (M)	Luminescence	

9/30 (W)	NMR	
10/2 (F)	No Lecture (Homecoming)	
10/5 (M)	Review for Exam 1	Homework 1 Due
10/7 (W)	Intro to Separations	Exam 1
10/9 (F)	Intro to Separations	
10/12 (M)	Paper and Thin-layer Chromatography	
10/14 (W)	Liquid Chromatography	
10/16 (F)	Liquid Chromatography	
10/19 (M)	Gas Chromatography	
10/21 (W)	Gas Chromatography	
10/23 (F)	Capillary Electrophoresis	
10/26 (M)	Capillary Electrophoresis	
10/28 (W)	Ion Mobility Spectrometry	
10/30 (F)	Microfluidics	Homework 2 Due
11/2 (M)	Review for Exam 2	Exam 2
11/4 (W)	Introduction to Mass Spectrometry	
11/6 (F)	Introduction to Mass Spectrometry	
11/9 (M)	Mass Spec ionization sources (small)	
11/11 (W)	No Lecturer (Veteran's Day)	
11/13 (F)	Mass Spec ionization sources (large)	
11/16 (M)	Mass Analyzers Part 1	
11/18(W)	Mass Analyzers Part 2	
11/20(F)	Mass Detectors	
11/23 (M)	Review for Exam 3	Homework 3 Due
11/25 (W)	No Class (Thanksgiving)	
11/27 (F)	No Class (Thanksgiving)	
11/30 (M)	Interpreting EI mass spectra	Exam 3

12/2 (W)	Interpreting EI mass spectra	
12/4 (F)	Review for Final	
12/7 (M)	Review for Final	Homework 4 Due
12/9 (W)	Final Posted in Canvas	