

Instrumental Analysis
CHEM 3420 / 7420G
Fall Semester 2014
08/28/14 – 12/23/14
432 & 447 New Ingersoll

Prerequisites: CHEM 3410 or CHEM 3415W and PHY 2100 or 2150

Instructor: Professor Brian R. Gibney 2411 Ingersoll
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Required Text: *Principles of Instrumental Analysis*, 6th edition, Skoog, Holler, Crouch
Brooks/Cole, New York, 2007

Scheduled Lectures: T/TH 6:30 – 7:20 pm (432 NE)
Scheduled Labs: T/TH 7:30 – 10:20 pm (443 NE)

Office Hours: Th 5:00 – 6:30 pm

Course Website <http://www.hemeprotein.info/Chem3420/Chem3420.php> (case sensitive)

Course Goals: Scientists from all disciplines rely on increasingly sophisticated instrumentation to perform detailed chemical analyses of samples. This course will provide you with both theoretical and practical instruction on the fundamental principles behind most of the common instrumentation used for chemical analyses. Through both lecture and laboratory instruction, you will become proficient in how each instrument is designed, how each collects and processes analytical signals, and how to evaluate the quality and reliability of the data collected. This knowledge will aid you in assessing experimental data, make you more adept at designing critical experiments, and will serve as your foundation for future work involving instrumental techniques.

Assignments: Homework exercises from the text will be given and the solutions posted the following week. Homework is not collected or graded, however professionalism demands that you keep current with the homework and reading assignments. I am not here to spoon feed you exam information. The homework will serve as an indication as to the type and level of difficulty of the questions/problems that you will find on the exams.

Grading: There will be one quiz, two one-hour exams and one two-hour final examination. The quiz is worth 10% of your grade, each hour exam is worth 15% of your grade, the final is worth 20% of your grade and the remaining 40% is made up from your laboratory reports. You must pass the lecture portion of the course to pass the course. The final grade may be curved.

- 90 -100% A
- 80 -89% B
- 70 -79% C
- 60 -69% D
- below 60% F

As per department policy, any request for an examination regrade must be made in writing using the form available on the Department website.

Academic Honesty Academic dishonesty will not be tolerated in any form. Evidence of cheating on exams, or copying of lab reports will result in a failing grade for the course, without exception. The CUNY policy on Academic Integrity can be found at:

http://www.cuny.edu/about/administration/offices/la/Academic_Integrity_Policy.pdf

Laboratory: Laboratory attendance is obligatory and you are strongly advised to be punctual and to maintain a laboratory notebook. Information on proper practice of a laboratory notebook will be distributed.

Course Topics:	Chapters 1-5	Measurement Basics	
	DC Electronics		
	AC Electronics		
	Signals and Noise		
		September 18, 2014	<i>Quiz</i>
	Chapters 22-25	Electrochemical Methods	
	Potentiometry		
	Coulometry		
	Voltammetry		
		October 16, 2014	<i>Exam I</i>
	Chapters 6-10	Spectroscopic Methods	
	Atomic Absorption		
	Atomic Emission		
	Chapters 13-16, 18		
	UV-visible Absorption Spectrometry		
Luminescence Spectrometry			
Infrared Spectrometry			
Raman Spectrometry			
	November 13, 2014	<i>Exam II</i>	
Chapters 19-20			
Nuclear Magnetic Resonance Spectrometry			
Mass Spectrometry			
Chapters 26-28, 30	Separation Techniques		
Gas Chromatography			
Liquid Chromatography			
	December 18, 2014	<i>Final Exam</i>	

Approximate Lesson Plan for Chem 3420/7420G

Date	Lecture	Laboratory	Laboratory Reports Due
August 28	Chapter 1	Electronics: Part A	
September 2	Chapter 2	Electronics: Part B	
September 4	Chapter 3	Electronics: Part C	
September 9	Chapter 4	Electronics: Part D	
September 11	Chapter 5	See Experimental Grid	
September 16	Chapter 22	See Experimental Grid	
September 18	Quiz	No laboratory	Electronics
September 30	Chapter 23	See Experimental Grid	
October 2	Chapter 24	See Experimental Grid	
October 7	Chapter 25	See Experimental Grid	
October 9	Chapter 6,7	See Experimental Grid	
October 14	Chapters 8,9	See Experimental Grid	Potentiometry
October 16	Exam 1	No laboratory	
October 21	Chapters 10	See Experimental Grid	
October 23	Chapter 13	See Experimental Grid	
October 28	Chapter 14	See Experimental Grid	
October 30	Chapter 15	See Experimental Grid	
November 4	Chapter 16,17	See Experimental Grid	
November 6	Chapter 18	See Experimental Grid	ISE, CV, ASV
November 11	Chapter 19	See Experimental Grid	
November 13	Exam 2	No laboratory	

November 18	No class		
November 20	Chapter 20	Make up	
November 25	No class		
December 2	Chapter 26	Make up	
December 4	Chapter 27	Make up	
December 9	Chapter 28	Make up	All remaining reports
December 11	Check-out		
December 18	Final Exam		