

CHEM 240: Intro to Bioanalytical Chemistry

Professor: Jeff Watson, HU230A, 323-5929, watsonj@gonzaga.edu

Text: *Exploring Chemical Analysis*, Harris, 3rd Edition
Introduction to Bioanalytical Chemistry, Oxtoby, custom edition
available at GU bookstore

Lecture: MWF 11:00-11:50, HU 003

Office Hours: Mondays, 1-3pm, Thursdays, 8:30-10:30am. I'm also very happy to make appointments. If I'm in my office, my door is generally open and you're welcome to stop by unannounced. If the door is closed, please knock. If I can't meet with you then, we can make an appointment for another time. E-mail is a terrific way to get in touch with me at other times.

Goals of the Class

- To become familiar with common analytical problems in biology and biochemistry
- To learn common techniques for analysis of biological systems, their strengths and limitations, and the types of data received
- To be able to quantitatively assess the accuracy, precision and quality of data from biological systems

Structure of the Class

This is meant to be, in part, a quantitative course. Quantitative skills are developed only by practice. There will be quizzes at the end of each section we cover and a weekly homework assignment due at the beginning of class on Fridays (except for exceptions listed in the schedule). Homework assignments will be posted on Blackboard and announced in class. The quizzes will cover material from the text, lectures and any supplementary handouts.

All material covered in lecture, any material from the pertinent sections of the textbook and any additional material handed out in class will be considered fair game for the exams. The final exam will be partly over the material covered after the previous exam and partly cumulative, covering material from the entire class.

Philosophy of the Class

While I will do all I can to communicate the course material to you in class, it is absolutely important that you keep current in the reading and end-of-chapter problems. Working problems with classmates can be of tremendous help. I am more than happy to help you with problems you're struggling with, but I highly recommend that you spend some time trying to figure them out yourself before coming to me. It'll help us get to the root of the problem more quickly and you'll have learned something along the way.

It is important that you come to class! Over the course of the semester, there may be questions and answers, in-class discussion and other material that will not be found in the textbook but may be found on exams. While you can obtain notes for missed classes from other classmates, it is not a substitute for attending and hearing the material yourself.

You will be expected to follow the University policy on academic honesty as outlined in the catalog and the Student Handbook. The policy can also be found on the Gonzaga website.

As a general rule, makeup exams will not be given. If you have a legitimate conflict (an unalterable commitment that takes you off-campus, a severe illness), then we can try to make arrangements. I will be the final arbiter of what I consider a legitimate conflict. If you know for certain you will be unable to take an exam, you must come talk to me **at least** three (3) days prior to the exam.

Grading and Evaluation

3 exams	100 points each
Homework Assignments	120 points
Weekly Quizzes	140 points
Final Exam	<u>200 points</u>
	760 total points

Grades will be assigned based on total points earned and the distribution of scores in the class.

WEEK	Monday	Wednesday	Friday
1/14	NO CLASS	Chemical Measurements H, pp. 1-10, 13-25, 51-54 (Ch. 0, 1, 3)	Sig Figs, Error H, pp. 51-54 (Ch. 3) <i>NO HOMEWORK DUE</i>
1/21	NO CLASS	Statistics H, pp. 54-62, 71-74 (Ch. 3, Ch. 4)	Acid-Base Chemistry H, pp. 153-162 (Ch. 8) QUIZ #1 (Ch. 1, 3 and 4)
1/28	Acid-Base Chemistry H, pp. 162-170 (Ch. 8)	Acid-Base Chemistry H, pp. 175-181 (Ch. 9)	Acid-Base Chemistry H, pp. 182-207 (Ch. 9, 10) QUIZ #2 (Ch. 8, 9)
2/4	Polyprotic Acids & Bases H, 219-228 (Ch. 10, Ch. 11)	Polyprotic Acids and Bases H, pp. 228-237 (Ch. 11)	Review and/or Catchup
2/11	EXAM #1	Spectrophotometry H, pp. 375-384 (Ch. 18)	Spectrophotometry H, pp. 384-390 (Ch. 18)
2/18	PRESIDENTS' DAY No Class	Spectrophotometry H, pp. 397-406 (Ch. 19)	Analytical Methods H, pp. 91-103 (Ch. 5) QUIZ #3 (Ch. 18, 19)
2/25	Elemental Analysis H, pp. 427-442 (Ch. 20)	Electrochemistry H, pp. 287-300 (Ch. 14)	Electrochemistry H, pp. 301-306 (Ch. 14)
3/3	Electrochemistry H, pp. 303-305 (Ch. 14)	Electrochemistry H, pp. 315-328 (Ch. 15)	Electrochemistry H, pp. 354-356 (Ch. 17) QUIZ #4 (Ch. 14, 15)
3/10	SPRING BREAK		
3/17	Review	EXAM #2	NO CLASS
3/24	NO CLASS	Chromatography H, pp. 447-457 (Ch. 21)	Chromatography H, pp. 479-489 (Ch. 22)
3/31	Chromatography H, pp. 499-508 (Ch. 23)	Chromatography and Electrophoresis H, pp. 509-515 (Ch. 23)	Chromatography and Electrophoresis QUIZ #5 (Ch. 21 to 23)
4/7	Chemical Kinetics O, 607-617 (Ch. 14)	Kinetics O, pp. 618-625 (Ch. 14)	Kinetics O, pp. 618-625 (Ch. 14)
4/14	Kinetics TBA	Kinetics TBA	Catalysis and Enzymes; Review No reading QUIZ #6 (Kinetics)
4/21	EXAM #3	Thermodynamics O, pp. 482-492 (Ch. 11)	Thermodynamics O, pp. 493-504 (Ch. 11) <i>NO HOMEWORK DUE</i>
4/28	Thermodynamics O, pp. 504-509 (Ch. 11)	Thermodynamics O, finish Ch. 11	Thermodynamics TBA QUIZ #7 (Thermo)
5/5	FINAL EXAM: Thursday, May 8th, 8am-10am		