

CHEM750 Advances in Bioanalytical Chemistry

Spring 2024

COURSE INFORMATION

Class Days / Times: Mon/Wed 7-8:15pm

Instructor: Dr. Hu

Class Location: GMCS-308

Preferred pronouns: she/her

Mode: face-to-face, including lectures, discussions

Email: please use the Canvas email function to contact Dr. Hu

Platform: Canvas

Office location: CSL408

Office hours: Appointment Required
(Wednesdays 12-1 pm)

COURSE OBJECTIVES

This course is tailored for graduate students in chemistry, biochemistry, biology, and bioengineering. It offers a comprehensive overview of standard bioanalytical methods, coupled with an in-depth examination of recent literature in the field. The first two-thirds of the course will focus on traditional methods such as enzyme assays, biosensors, separations, and protein and nucleic acid analysis. These will be explored alongside cutting-edge techniques like protein/peptide synthesis and detection, microfluidics, next-generation sequencing, digital PCR, and fluorescence microscopy. The course will also delve into the practical applications of these advanced methods, particularly in areas like combinatorial library creation and high-throughput screening in early-stage drug discovery. During this phase, students will be tasked with reviewing and critiquing scholarly articles, submitting written reviews, and leading class discussions on their findings. The final third of the course shifts to student-led presentations, where participants will use PowerPoint to present and discuss recent developments in bioanalytical literature. Well-prepared undergraduate students are encouraged to contact Dr. Hu regarding enrollment.

STUDENT LEARNING OUTCOMES

- Identify and apply advanced bioanalytical techniques.
- Critically evaluate and summarize relevant scientific literature.
- Choose appropriate research methodologies for proposed projects.
- Develop and refine scientific communication and presentation skills.

COURSE MATERIALS

The exam will cover the lecture topics and literature analyses, provided through Canvas. Below are some recommended texts, but these are not required.

- Bioanalytical Chemistry (2nd Edition), 2016; Mikkelsen and Corton
- Bioanalytical Chemistry (2nd Edition), 2015; Manz, Dittrich, Pamme, Iossifidis

GRADING

Class Participation	10%
Literature Review Assignment	20%
Exam (comprehensive)	30%
Presentation	40%

Cutoffs: > 90% = A
80-90% = B
70-80% = C
60-70% = D
50-60% = E
< 50% = F

ESSENTIAL STUDENT INFORMATION

For essential information about student academic success, please see the SDSU Student Academic Success Handbook.

- SDSU provides disability-related accommodations via Student Disability Services (sds@sdsu.edu | <https://sds.sdsu.edu/>). Please allow 10-14 business days for this process.
- Class rosters are provided to the instructor with the student's legal name. Please let me know if you would prefer an alternate name and/or gender pronoun.

DISHONESTY

I am committed to upholding the University's strict policy on cheating and plagiarism. These behaviors are not tolerated in this class. Please familiarize yourself with the policy (<http://www.sa.sdsu.edu/srr/conduct1.html>). Any instance of cheating or plagiarism will result in a failing grade for this class and may lead to a disciplinary review by Student Affairs.

Plagiarism can take many forms, including but not limited to:

- Using text from a source verbatim or paraphrasing it without proper citation (this includes phrases, sentences, paragraphs, and entire sections of work).
- Copying and pasting material from an online or offline source and presenting it as your own.
- Using information found online or offline without giving proper credit to the original author.

- Replacing words or phrases from a source with your own without proper attribution.
- Submitting the same work for different classes without permission.

If you have any questions about what constitutes plagiarism, please consult the policy (<https://sacd.sdsu.edu/student-rights/academic-dishonesty/cheating-and-plagiarism>).

DIVERSITY, INCLUSION AND TEACHING PHILOSOPHY

I am dedicated to cultivating an inclusive learning environment where every student feels respected, supported, and empowered to achieve success. We all bring diverse perspectives and experiences that deepen our collective understanding of science. My goal is to create a classroom where everyone feels welcome and encouraged to engage fully in the learning process.

LAND ACKNOWLEDGMENT

For millennia, the Kumeyaay people have been a part of this land. This land has nourished, healed, protected and embraced them for many generations in a relationship of balance and harmony. As members of the San Diego State University community, we acknowledge this legacy. We promote this balance and harmony. We find inspiration from this land, the land of the Kumeyaay.