

CHM4413L: Biophysical Laboratory for UF Chemistry Majors

Instructors: Dr. Matthew Eddy Office Hours: Mon 11am-12pm Office: SFH 302C	
Dr. Gail Fanucci, Office Hours: Contact to schedule an appointment Office: CLB 311F	
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Dr. Xueying Zhao Office Hours: Wed 9-10 am, Fri 9-10 am Office: LEI 232

Dr. Mingjie Liu Office Hours: Mon 12-1pm Office: LEI 240C

Teaching Assistants

Rasaq Adams, Office Hours Tue 10:30-11:30am CLB112 Tina Li, Office Hours Wed 10:30-11:30am LEI342 Fnu (Ritu) Ritu, Office Hours Thu 9:30-10:30am LEI342 Kattayani Sarkar, Office Hours Thu 10:30am-12pm LEI352 Namodhi Wijerathne, Office Hours Tue 5-6pm, CLB313 Mingwei Zhou, Office Hours Mon 5-6pm, LEI342

Course Website

We use our secure website, a Canvas site hosted by Instructure.

Course Texts and Manuals

All course materials will be available through our Canvas site. There are no required printed textbook or lab manuals. Feel free to print anything from our website if you prefer. The schedule of experiments, quizzes and reports are all contained within the Canvas website.

Communication

All electronic communication should be conducted through the course Canvas e-learning site.

Instructors and TAs are generally available via Canvas messaging and will make every attempt to respond in 24 hours during normal working days. However, if you wait to the last minute to contact us regarding questions for an assignment, we may not get back to you before the assignment due date. Organization of the lab modules will be divided among the four instructors, as described on the Canvas site. However, you are welcome to contact any instructor or TA for help at any point during the semester.

Lectures

M 9:35 – 10:25 am, FLG0270

All sections will meet once a week for background information, discussion of the lab activities, and expectations for assignments. Attendance is <u>EXPECTED</u>. A great deal of information is given in class regarding the

		SPRING SEMESTER 2025						
	s	М	Т	W	Т	F	S	
Jan.				Holiday 1	2	3 Registration	4	
	5	6	7	8	9	10	11	
	12	13	14	15	16	17	18	
	19	Holiday 20	21	22	23	24	25	
	26	27	28	29	30	31		
Feb.							1	
	2	3	4	5	6	7	8	
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	
	23	24	25	26	27	28		
Mar.							1	
	2	3	4	5	6	7	8	
	9	10	11	12	13	14 Sp	ning Brea 15	
	16	17	18	Spring 19	Break 20	21	22	
	23	24	25	26	27	28	29	
	30	31						
Apr.			1	2	3	4	5	
	6	7	8	9	10	11	12	
	13	14	15	16	17	18	19	
	20	21	22	23	Readi 24	ng Days 25	26	
	27	28	29	30		Commen	ement	
May					1	2	3	
	Comm. 4	Grades Due 5	Deg. Ce	ert. 7	8	9	10	

laboratory reports and expectations.

Lab Sessions

Each section is assigned a specific afternoon meeting time. Some data analysis and database activities will be held in a more traditional classroom. Locations will be posted in announcements so please set up your Canvas account to automatically notify you of announcements. Please be prepared for all lab sessions. Contact your instructors at least one week in advance if any potential absences are anticipated. Please show up on time for your lab. Lateness will be reflected in your notebook grade.

Course Description

This one-semester laboratory course introduces undergraduate chemistry majors to the experimental and analytical techniques used in biophysical chemistry. Students will explore the physical principles governing structure, dynamics, and chemical interactions of biological molecules including proteins and lipids. This course includes hands-on experimental techniques paired with theory and computational modeling to derive physical insights into biochemical processes. Emphasis is placed on quantitative analysis of data, the integration of chemical and biophysical principles, and interpretation of data with appropriate physical models. This course prioritizes laboratory safety, and also encourages the development of scientific communication skills through written and oral presentations. By the end of the course, students will have developed proficiency in biophysical technical skills and critical thinking skills expected of an upper-level chemistry major.

Course Objectives

- **Promote laboratory safety awareness:** demonstrate an understanding of chemical and biological hazards in the lab and adhere to all safety protocols, including the use of PPE (see below).
- Integrate concepts of chemistry with biophysics: build on the foundation of prior chemistry coursework and apply fundamental concepts in the context of biophysical chemistry.
- **Quantify biomolecular interactions:** make quantitative observations about biochemical systems, both in experiments and through simulations and modeling
- **Develop skills in quantitative analysis of data:** utilize statistical methods to fit experimental data and develop an understanding of reproducibility in the context of scientific measurements.
- **Bridge theory and applications to interpret data:** utilize physical models and theory to reach meaningful insights from the quantitative analysis of experimental data.
- **Communicate scientific findings:** effectively present experimental results through written laboratory reports and oral presentations, both individually and in small groups.
- Explore current biophysical research: relate course experiences to modern biophysical research

Lab Safety

You are expected to have and use all proper safety equipment and procedures when in the laboratory. This includes, but is not limited to, eye protection and appropriate clothing/skin covering and shoes. We may also be using optical and IR lasers which require specific radiation safety procedures. For more information about lab safety see the course website and consult your lab instructor. You will be sent home if you show up with inappropriate attire. Your lab notebook grade will reflect the unpreparedness for the activity.

Ethics

We expect deportment and conduct appropriate of research professionals of students in this course. This includes the complete understanding of academic integrity, plagiarism, and data fabrication.

Groups

Each lab section will be divided into groups of two people per bench. You will work together as a team in

lab, but pre-lab quizzes and assignments will be submitted individually, unless otherwise specified. If there are problems within your group dynamic, these can be reported and teams can be regrouped for the second half of the semester. Please pay attention to all assignment designations and Groupings on the Canvas site.

Lab Notebook and Data Plotting

Every good Chemist has a lab notebook by their side. It is a journal, evidence of discovery, a historical record. and a valuable tool. You will keep a proper lab notebook in this course. Your notebook will be graded and checked upon leaving each lab period. You should come to lab prepared with all tables and notes within the lab notebook. TAs will check your notebook at the beginning of the laboratory period to ensure you have come prepared. Even when working in a group each student should have complete data notes within their own lab notebook. You also should have at least one person in your group come with a laptop that has sufficient software to plot data before you leave the laboratory session. It is your responsibility to repeat data measurements in cases where things have gone awry. Many assignments are to show your pre-processed data or preliminary graphs BEFORE leaving the laboratory period. Your notebook itself (organization, completeness, etc.) will be assessed every lab session as "acceptable" (100%), "unacceptable" (50%), or "missing" grade (0%). This assessment will be averaged for the term to yield your **Notebook** grade (see below). One unacceptable (but not "missing") grade will be dropped from the term's Notebook grade calculation (if it exists). Lateness or inappropriate attire will result in a deduction of 25% from your notebook grade for each occurance.

Course Grade Computation

Your course letter grade will be derived from activities that are graded as outlined on the Canvas website

Grade Ranges						
>94%	A	65% - 70%	C+			
88% - 93.9%	A-	60% - 65%	С			
80% - 88%	B+	55% - 60%	C-			
75% - 80%	В	50% - 55%	D+			
70% - 75%	B-	40% - 50%	D			
		< 40%	E			

Your course grade will be determined from your total course performance percentage as follows:

All grades will be posted in the Canvas GradeBook, as available. UF's Grading Policy: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.asp

Absences

Excused absences are allowed in accordance with <u>UF policy</u>. We expect students who either know of a planned absence (e.g., due to a scheduled interview for professional or graduate school), or who experience a sudden absence (e.g., due to illness) to communicate with the instructors and your TA. For planned absences, communicate your absence at least one week in advance.

Assignment deadlines

If you are going to submit a late assignment the following process needs to be followed:

At least 2 days prior, email the instructors and your TA letting us know which assignment will be late and a proposed date of submission. You do not need to have an email back from us in acceptance, and we will not even ask your reason. But, if you submit later than YOUR proposed submission date, there will be a 10% deduction for each day (24 hrs) the assignment is late past your due date.

Cell Phone & Laptop Policy

Please put all cell phones and other digital devices on "silent mode" during all class and lab periods.

Getting Help

For quickest response, you might find posting questions to the Canvas Discussion Board might be a good choice. Messaging the Instructor, TA, or even a classmate from within Canvas also works.

For Username/Password issues, such as difficulties logging into any Gatorlink-authenticated site at UF, (including our Canvas), please contact the UF Help Desk at: <u>helpdesk@ufl.edu</u> (352) 392-HELP - select option 2.

Regrade policy

If you believe a mistake has been made on the grading, please notify the professor and your TA through Canvas within 1 week of receiving the assignment. We will look at it and evaluate on a case-by-case basis. If a re-grade is requested, the entire assignment will be reviewed. If an error was made in favor of a student, for example by not catching a mistake made during the first submission, then points will also be deducted upon re-grading. If a lower score results from regrading, then the lower score will stand.

University Policy on Accommodating Students with Disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Students with disabilities have an equal right to use and benefit from resources at the George A. Smathers Libraries, including (but not limited to) Course Reserve materials. To ensure this right, students with disabilities:

- Have the responsibility to identify themselves as needing appropriate, reasonable accommodations for their disabilities
- Have the responsibility for making their needs known in a timely manner
- Have the same obligation as any library user to comply with library policies and procedures

The George A. Smathers Libraries Course Reserves Unit will work with patrons needing assistance or accommodations to access course reserve materials.

University Policy on Academic Misconduct

This class will operate under the policies of the student honor code, which can be found at: <u>https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code</u> The students and instructor are honor-bound to comply with the Honors Pledge: *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.*

In accordance with these policies, it is our expectation that any submitted written assignments are in your own language. This means that submission of verbatim or nearly-verbatim text taken from other sources, including from the use of AI language models such as chatGPT, and repurposed for your own assignments without proper acknowledgement of the original citation will be considered a violation of the honor code and treated as such.

Zoom Presence Policy

This class may contain hybrid lectures, i.e. lectures that are simultaneously given in-person and broadcast online via Zoom. Our class lectures may be audio and 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 orally 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.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center:

http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Policy on In-class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student

Course Evaluations

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/