

CHM 4413L, Biophysical Chemistry Laboratory Spring 2012

- Instructors:** Gail E. Fanucci, CLB 311F/313, fanucci@chem.ufl.edu
Office Hours: Mondays 1 - 2pm at CLB 311F, and Thursdays 10:30 - 12 PM at CLB 311
- Dr. Mine Ucak-Astarlioglu, CLB 311G, ucakm@ufl.edu
Office Hours: Wednesdays 11:00 AM - 12:30 PM, and Thursdays 12:35 PM - 1:35 PM
- Teaching Assistant:** Abraham Boateng, boateng@chem.ufl.edu, Leigh 310
Office Hours: TBA
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Office Hours: TBA
- Adam Smith, adams@ufl.edu, CLB 313
Office Hours: TBA
- Jackie Esquiaqui, jackiem1027@hotmail.com, CLB 313
Office Hours: TBA
- Class Meeting Times:** 3:00 PM - 3:50 PM, 8th period, M
- Class Room:** Lei 207
- Lab Meeting Times:** 7:25 AM - 12:35 PM, 1st - 5th periods on R, and 12:50 PM - 6:00 PM, 6th - 10th periods on W, R, and F.
- Lab Room:** Lei 248
- Library Room:** 1st Meeting: Marston Science Library, Room 308.
2nd Meeting: Health Science Center Library, HSCL, Room C2-3.
- Objectives:** CHM 4413L focuses on measurements of physical properties for biologically significant systems, including data and error analysis and presentation of results in written and oral form.
- Texts:** Fanucci, G. and Ucak-Astarlioglu, M. *Experiments for Biophysical Chemistry*, Spring 2012, University Copy and More: Gainesville, 2012.

Williams, K.R. *Error Analysis in Physical and Analytical Chemistry*, 3rd Ed., University Copy and More: Gainesville, 2012.

Other Required: Laboratory Notebook with duplicate pre-numbered pages; safety glasses; departmentally approved attire; diskettes, USB drive.

Lectures: Besides the texts listed above the material to be covered in the lectures will include:

1. Personal notes on the various experiments to be performed, safety procedures, etc. with reference to the lab manual. There may also be guest speakers on various experimental topics as announced.
2. Discussion of general biophysical chemical experimental techniques.

Grade Distribution:

Assignment Type	Number	Points Each	Total Points
Prelab Assignments	6	25	150
Abbr. Lab reports	4	100	400
Full Lab Reports	2	200	400
Homework	1	50	50
pKa Data Analysis	1	50	50
Library Assignment	1	50	50
Oral Presentation	1	100	100
Preparedness/Attendance/Subjective Grade	1	100	100
Final	1	100	100
Total Points:			1400

Note: You may chose not to turn in an assignment as your drop; but you will also live with those consequences from not having feedback from grading.

Factors affecting the subjective grade will be the student's attendance record (lecture and lab), punctuality, preparation for laboratory work, laboratory technique, understanding of the experiments, and general attitude.

Reports must demonstrate your own understanding of the scientific work. You may not paraphrase or use other students' reports in the preparation of your own reports. Otherwise actions will be taken due to academic dishonesty.

Grading Scale in Percentages:

$A \geq 90$	$60 \leq C < 65$
$85 \leq A^- < 90$	$55 \leq C^- < 60$
$80 \leq B^+ < 85$	$50 \leq D^+ < 55$
$75 \leq B < 80$	$45 \leq D < 50$
$70 \leq B^- < 75$	$40 \leq D^- < 45$
$65 \leq C^+ < 70$	$E < 40$

Written Reports: Except for equations, full and abbreviated reports must be double-spaced typed using a minimum font size of 12 point. Equations (both mathematical and chemical) should be typed using an equation editor unless otherwise noted by the instructor. Chemical structures should be drawn by using ChemDraw. Full and abbreviated report writing and grading guidelines should be followed as posted on SAKAI website. In writing full reports you should assume that your experiment will be published in a journal and will reach numerous scientists all around the world. Therefore, you must work meticulously on its preparation. It must be an original piece of writing. Each lab report requires **8-15 hours of work** outside of class. You may use *Journal of Physical Chemistry* papers as good models for writing physical chemistry reports. Please see additional handouts for expectations and grading schemes for written reports on Sakai.

Oral Reports: Oral report topics will be assigned to you by your instructor. Organize your talk to fit a 15-minute time block (typical length at an ACS meeting, etc.) and additional 5-minutes to answer questions. Use PowerPoint to facilitate the presentation. You should approach the oral report as a job or graduate school interview and should come suitably dressed. Save your presentation to an usb thumb drive and bring it to CLB 2nd floor Physical Chemistry Conference Room to give your presentation.

On-line Quiz: There will be one on-line quiz on Sakai. The on-line quiz will be available for a certain amount of time. The quizzes are intended to be a study guide to help prepare you for studying for the exam.

Notebooks: Students should follow the writing guidelines of notebooks as can be found in 4413L SAKAI website for each experiment.

Library Training: It is mandatory to attend library training and complete the library assignments.

1st Library Meeting with Ms. Donna Wrublewski at Marston Science Library Room 308:

Wednesday, 2/29/12, 1pm – 3pm	1 PM-3 PM
Thursday, 3/1/12	9 AM – 11 AM
Thursday, 3/1/12	2:30 PM – 4:30 PM
Friday, 3/2/12	1 PM – 3 PM

2nd Library Meeting with Dr. Michele Tenant at HSCL, Room C2-3:

Wednesday, 3/14/12	2:00 PM - 4:00 PM
Thursday, 3/15/12	8:30-10:30
Thursday, 3/15/12	2:00-4:00
Friday, 3/16/12	2:00-4:00

Library Guide for the course is:

<http://guides.uflib.ufl.edu/chm4411>

Prelab Exercises, Collecting and Analyzing the Data Before Leaving the Lab: Prelab assignments need to be turned in BEFORE the lab starts. If they are turned in within the first 20 minutes of the lab period, a grade of 50% of the earned score will be given. If they are turned in later than this time, a grade of zero will be given for that prelab assignment. If the TA or instructor observes that you are unprepared for the lab (ie you do not appear to know what you are doing, you cannot answer questions asked of you) 5 points will be deducted. Please come prepared and knowledgeable about the tasks you are going to perform. Also, it is strongly suggested that you come to the lab period with your laptop and the excel data sheet set up for your data collection and analysis. You will only be allowed to leave the lab period after the TA or instructor check your excel sheet for proper data input and analysis calculations. Essentially when you leave the lab period, the majority of the data analysis and graphing should be complete.

Late Arrival and Unpreparedness: For each time you arrive to lab late, 5 points will be deducted from my subjective grade. Note that excessive tardiness to lecture will also result in a reduction of my subjective grade. Now, if you are running behind, I would rather you still come to class. Points will only be deducted if you have a habit (ie more than 3 times) arriving late. If you are too late for the lab period you may not be admitted to that particular lab.

Cell phones: Please put all cell phones or pagers on “silent mode” and in your backpacks or purse during all class/ lab periods. No texting, internet searching, tweeting or facebook activities during lecture and lab.

Students with Disabilities: Appropriate accommodations will be provided, according to the policy at www.chem.ufl.edu/~itl/disabilities.html.

Counseling Services: The University of Florida provides counseling services for students, staff, and faculty. See <http://www.counsel.ufl.edu/> or call (352)-392-1575 during regular service hours (8am-5pm). For other hours or weekends call the Alachua County Crisis Center (264-6789). Students may also call the clinician on-call at Student Mental Health for phone callback and consultation at (352)-392-1171.

Academic Honesty and Plagiarism: If the instructor suspects that you have copied another student’s lab report or plagiarized previous lab reports from earlier semesters, a grade of zero will be given for that assignment and disciplinary action with UF Academic Honesty Court will be pursued. Students are expected to obey the University of Florida Honor Code, detailed at www.chem.ufl.edu/~itl/honor.html. Violations will be reported to the Office of Student Judicial Affairs.

Schedule of Experiments and Reports: Each student will complete all the experiments as scheduled, submit 6 prelabs, write 2 full reports, 4 abbreviated reports, complete library and error analysis assignments, and submit data analysis for pKa. In addition, one oral report will be presented during the laboratory periods. Written reports must be submitted to the professors or the TAs on the designated dates at the beginning of the sections. Deductions at the rate of 5% per day (including weekends) will be assessed for late work. All written work (late or otherwise) must be received by 12:50 PM on Friday, 04/20/2012.

Week #	Date (T)	Lecture	Experiment (W,R,R,F)	Report Type	Report Due Date	Quiz/Hmwk/Prelab (due beginning of lab)
1	01/10	NMR data analysis	Cis/Trans Equilibrium of N-acetylcholine	Abbr (NMR - GEF).	Week of 1/24	Prelab
2	01/17	Intro Error Analysis	Lecture CLB – Excel NMR lab Analysis*	Hmwk (TA)	1/24 (HW) (PS)	None
3	01/24	Particle in a Box	Rotation #1 [¶]	Abbr (TA).	1 week	Prelab
4	01/31	Spectroscopy	Rotation #1 [¶]	Abbr (TA).	1 week	Prelab
5	02/07	Thermodynamics/DSC	Rotation #1 [¶]	Abbr (TA).	1 week	Prelab
6	02/14	pKa	pKa (data collection)	Data analysis (TA)	1 week	Prelab
7	02/21	pKa cont./Fluorescence	pKa (data analysis)	Full (MUA)	Week of 3/13	Data analysis due
8	02/28	TBA	Library Methods and Assignment (MSL 308)			None
9	03/06		SPRING BREAK			
10	03/13	Kinetics	Health Science Library	Hmwk (Dr. Tenant)	2 weeks	None
11	03/20	Kinetics	Rotation #2 [‡] Carbonic Anhydrate	Full (See below)	2 weeks	Prelab
12	03/27	Binding Theory	Rotation #2 [‡] Carbonic Anhydrate	Full (See below)	2 weeks	Prelab
13	04/03	Binding Theory	Rotation #2 [‡] Carbonic Anhydrate	Full (See below)	2 weeks	Prelab
14	04/10	TBA	Make up Week			
15	04/17	TBA	Oral Presentations			Questionnaire
16	04/24	Final Exam-On line Quiz				

Rotation #1 Schedule:

Experiment Name	Membrane Permeability	Conjugated Dye	Phase Diagram
Report Type	Abbr.	Abbr.	Abbr.
Week 3 02/01	Group A	Group C	Group B
Week 4 02/08	Group B	Group A	Group C
Week 5 02/15	Group C	Group B	Group A

Note: During this rotation, you will be in lab each week. You are to come prepared with the prelab for your assigned experiment: due at the beginning of the lab period.

Rotation #2 Schedule:

Experiment Name	Carbonic Anhydrase
Report Type	Full
Week 11 03/20	Group A
Week 12 03/27	Group C
Week 13 04/03	Group B

Note: Not everyone will have a lab period each week! PAY ATTENTION to your group. Your prelab for the experiment you do that week is due at the beginning of the lab period.