

CHM 4413L, Biophysical Chemistry Laboratory Fall 2011

Instructor: Dr. Mine Ucak-Astarlioglu, CLB 220, ucakm@ufl.edu
Office Hours: 11 am - 1 pm, M and TBA

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Office Hours: TBA

Class Meeting Times: 1:55 pm - 2:45 pm, 7th period, M

Class Room: Lei 104

Lab Meeting Times: 12:50 pm – 6:00 pm, 6th – 10th periods, W or R

Lab Room: Lei 248

Library Room: 1st Meeting: Wednesday section: LIBRARY WEST ROOM 211, Thursday section: Marston Science Library, Room L308.

2nd Meeting: Wednesday and Thursday sections: 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: Ucak-Astarlioglu, M. *Experiments for Biophysical Chemistry*, Fall 2011, University Copy and More: Gainesville, 2011.
Williams, K.R. *Error Analysis in Physical and Analytical Chemistry*, 3rd Ed., University Copy and More: Gainesville, 2011.

Other Required Materials: 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 physical chemical experimental techniques.

Grade Distribution:

Assignments	Experiments	Points
Full reports: 4 (drop lowest grade)	NMR, pKa, Bilirubin, pKa Data Analysis	300 pts total. (100 pts/ each)
Abbreviated reports: 4 (drop lowest grade)	Permeability, Carbonic Anhydrase, Conjugated Dye, Phase Diagram, Estradiol	150 pts total (50 pts/ each)
Homework	Error Analysis	100 pts
Prelab Assignments	All experiments	200 pts total (25 pts/ each)
Notebooks	All experiments	200 pts total (25 pts/ each)
Written Library Search	Research	75 pts
Oral Research Presentation I	Research	200 pts
Oral Research Presentation II	Research	150 pts
Written Library Assignment	Library Assignment	75 pts
Exams	pKa, and Instrumental	100 pts total (50 pts/ each)
Subjective Grade	Subjective	50 pts
Total		1600

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.

Scheme:

1450 pts. A; 1400 pts. A-; 1333 pts. B+; 1267 pts. B; 1200 pts. C+; 1100 pts. C; 1033 pts. D+; 933 pts. D; <933 pts. E.

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. 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.

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.

Notebooks: Students who will not submit a full lab report for that particular experiment should submit the copies of their notebook pages before they leave the laboratory. The writing and grading guideline of notebooks can be found in 4413L SAKAI website.

1st Library Meeting (librarian Ms. Donna Wrublewski):

Wednesday section: August 24th, 2-4pm; LIBRARY WEST ROOM 211. Enter Library West, and take the escalator to the 2nd floor. Facing the service desk, Room 211 is on the left. (Library West, north of Marston, is between the Plaza of the Americas and University Avenue.)

Thursday section: August 25th, 1-3pm - MARSTON SCIENCE LIBRARY ROOM 308. Coming out of the elevator or stairs, 308 is right in front of you, slightly to your left.

2nd Library Meeting (librarian Dr. Michelle Tenant):

Health Science Center Library, HSCL, Room C2-3.

Wednesday section: 26th of October, 1:00-3:00 and

Thursday section: 27th of October, 1:00- 3:00

If needed you may ask for directions at the info desks on the 1st floor or 2nd floors of the library.

Library Guide for the course is:

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

Prelab Exercises: Before coming to the labs read the experiment carefully and solve the prelab exercise questions. Submit the answers of prelab exercises to your TA at the beginning of your experiment. No prelabs will be accepted after the respective experiment is performed.

Notes:

If you are too late for the lab period you may not be admitted to that particular lab.
There will be no makeup labs.

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

Academic Honesty: 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, write 4 full reports, 4 abbreviated reports, and complete two library assignments. In addition, two oral reports will be presented during the laboratory periods; first reports on 10/ 12, 13, and the second reports on 11/30 and 12/1. Each student will write 4 full and 4 abbreviated reports. Written reports must be submitted to Dr. Ucak 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, 12/12/2011.

Week	Lecture (M)	Experiment (WR)	Report Type	Report Author	Report Due
8/22	Intro	Library Search (MSL 308)	Literature search	A&B	9/12
8/29	NMR Data Analysis	<i>Cis/Trans</i> Equilibrium	Full	A&B	9/14, 15
9/5	Labor Day/ No Lecture	Lecture "Error Analysis"	HW	A&B	9/12
9/12 ‡	Kinetics 1	Membrane Permeability ‡	Abbr	A	9/28, 29 ‡
9/19 ‡	Kinetics 2	Carbonic Anhydrase ‡	Abbr	A&B	9/28, 29 ‡
9/26	pKa	pKa	Full	A&B	10/19, 20
10/3	pKa Exam	pKa Data Analysis	Full*	A&B	10/5, 6
10/10	TBA	Oral Reports I	Oral	A&B	10/12, 13
10/17	Quantum Mechanics I	Conjugated Dye	Abbr	A&B	10/26, 27
10/24	Quantum Mechanics II	Library Search (MSL 308)	Library Assignment	A&B	11/2, 3
10/31 †	Spectroscopy/ Fluorescence	Phase Diagram †	Abbr	A&B	11/16,17 †
11/7 †	Thermodynamics/ DSC	Estradiol †	Abbr	B	11/16,17 †
11/14 †	Binding Theory	Bilirubin Binding Constant †	Full	A&B	11/ 28 (Mon) †
11/21	Liquid Scintillation Counting	No lab - Thanksgiving			
11/28	Instrumental Exam	Oral Reports II	Oral	A&B	11/30, 12/1
12/5	TBA	No lab - Reading			

‡ = 3-week rotation.

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*pKa data analysis will be completed and submitted to the TAs in the lab period on 10/5, 6 (100 pts), and then in full report format on 10/19, 20.