CHM4413L: Biophysical Laboratory

for UF Chemistry Majors

Sections 12D5 (M), 12ED (T), 3784 (W), 4733 (R), 6105 (F)

2B61 (D)

Spring 2016 (Jan 05 – April 25)

(2 Credit Hours)

Course Website: https://ufl.instructure.com/courses/326138

Course Materials and "Manual": All course materials will be available through our secure course website, listed above, which is a Canvas LMS site hosted by Instructure. There is no printed textbook or lab manual.

Instructors: Gail Fanucci and P Brucat

Contact info: Your instructors are to be contacted through the Canvas Messaging tool only. If it is an emergency, *and* Canvas messaging is unavailable, you may contact Fanucci using fanucci "at" chem.ufl.edu.

Teaching Assistants (Contact through Canvas Messaging)

Maria Buteler	Qirui Chang
Daniel Chaves	Jorge Medina
Ian Smith	Nhi Tran
Qiong Wu	

Weekly "Lectures"

We all meet together Wednesdays period 4 in Mat 018 for background information, discussion of the lab activities, and expectations for assignments.

Lab Sessions

Each section is assigned a specific afternoon meeting time in LEI248. Be prepared for these and contact your instructors well in advance of any anticipated absence.

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. We will 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

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 divided into four groups of (nominally) four people. You will work together as a team in lab, but pre-lab quizzes and the abbreviated reports will be submitted individually. All other assignments, including the full report, will be submitted as a team.

SPRING SEMESTER 2016

	S	M	T	W	T	F	S
Jan.						Holiday 1	2
	3	Registration 4 Drop/Add	5	6	7	8	9
	10	11	12	13	14	15	16
	17	Holiday 18	19	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	Spring Break 27
	28	Spring Break 29					
Mar.			Spring Break 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	29	30	31		
Apr.						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	Reading Days 21	22	Commencement 23
	24	25	26	27	28	29	30
May		Comm 1	Grades Due 2	Deg Cert. 3	4	5	

Laboratory Schedule (Subject to change; See course website for latest information)

Week	Date	Module	Notes	Assignment	Due Date
1	Jan 6-8th	No Lab			
2	Jan 11-15th	Cis-Trans Equilibrium - NMR	Prelab Quiz	Abbreviated Report	2 weeks
3	Jan 18-22	Data Discussion – Part 1 Plotting/Abstract/Tables/Error		In-class participation	Due end of Part 2
		Rotation A: **-Conjugated Dye** **-Membrane Permeability**			
4	Jan 25-29	Rotation A	Prelab Quiz	Abbreviated Report	1 week
5	Feb 1-5	Rotation A	Prelab Quiz	Abbreviated Report	1 week
6	Feb 8-12	Data Discussion – Part 2		Peer Evaluation of NMR Data Analysis	Due end of lab period
		Rotation B: **- Heat Capacity** **- Colligative Properties** **- Phase Diagram**			
7	Feb 15-19	Rotation B	Prelab Quiz	Outline of Design	Due end of lab period
8	Feb 22-26	Rotation B		YouTube Summary	2 weeks
9	Feb 29-March 4	Spring Break		*stay	safe*
10	March 7-11	Rotation B	Prelab Quiz	Outline of Design	Due end of lab period
11	March 14-18	Rotation B		YouTube Summary	2 weeks
12	March 21-25	Rotation B	Prelab Quiz	Outline of Design	Due end of lab period
13	28-April 1	Rotation B		YouTube Summary	2 weeks
		Pièce de Résistance (FQET)			
14	April 4-8	Fluorescence/Quenching/Energy Transfer	Prelab Quiz	Data Processing	1 week
15	April 11-15	Fluorescence/Quenching/Energy Transfer cont.		Full Report	Apr 25
16	April 18-20	Classes End on Wed			

Due Dates are relative to the day of your lab session

Abbreviated Reports will require discussions of data analysis and systematic error where other reports will focus more on the figures/tables and abstracts. Specific Details for each Abbreviated Report will be given in the course website.

Prelab Quizzes In any rotation, you are to perform the pre-lab quiz individually for the experiment your group will be doing that week. These quizzes will be due at midnight Sunday of the week of the lab.

Rotation A is a two lab rotation of 1 week experiments: The Conjugated Dye and the Membrane Permeability investigations. The "deliverable" is an abbreviated report due one week after the completion of the lab work.

Rotation B is a three lab rotation of two week experiments: Heat Capacity, Colligative Properties and Phase Diagram investigations. There is a deliverable in each week. The first week is either an experimental design or preliminary findings to be refined or carried further in the second week. The second week deliverable will be a short video presentation of results (YouTube style)

FQET: Now that we are all grown up, we will dabble with one of the greatest challenges to a Chemist of all time. No, not turning Lead into Gold. Controlling the flow of energy using molecular structure. This is a two week lab, in which the first week deliverable is mature and succinct analysis of the data acquired, and the second weeks deliverable is a full lab report, similar to what a real research group might submit to a journal such as Chemical Physics Letters or the like.

Lab Notebook

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. You will even get some points for having a good one.

Course Grade Computation

Your course letter grade will be derived from a simple calculation: the weighted average of your performance in:

Prelab Quizzes (7)	15%
Abbreviated Reports (3)	25%
Peer Evaluations (1)	5%
Experimental Design (2)	7%
Data Processing	5%
Notebook	3%
YouTube Reports (3)	25%
Full Report (1)	15%
Total	100%

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

80%	A
77%	A-
73%	B+
70%	B
67%	B-
63%	C+
60%	C
50%	D
< 50%	E

All grades will be posted in the Canvas GradeBook, as available.

UF's Grading Policy: http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

Getting Help

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

For Username/Password issues, such as difficulties logging into any Gatorlink-authenticated site at UF, (including our course website), please contact the UF Help Desk at:

helpdesk@ufl.edu
(352) 392-HELP - select option 2

Quality of Life

Resources are available at http://www.distance.ufl.edu/getting-help such as:

- Counseling and Wellness resources
- Disability Resources
- Online Library Help Desk
- Dean of Students Office

Lecture/Discussion Schedule

Week	Date	Topic	Presenter
1	Jan 6th	Intro and NMR experiment background	Fanucci
2	Jan 13th	Quantum Mechanics and Particle in a Box	Fanucci
3	Jan 20th	Plotting/Abstract/Tables/Figures/Errors – Monday lab registrants only required to attend	Brucat/Fanucci
4	Jan 27th	Heat Capacity and Colligative Properties	Brucat
5	Feb 3rd	Explanation for Peer Evaluations	Brucat/Fanucci
6	Feb 10th	Discussion for Experimental Setup	Brucat
7	Feb 17th	DSC and Microscope Background	Fanucci
8	Feb 24th	Fluorescence Introduction	Fanucci
9	March 2nd	Spring Break	Relax / Enjoy
10	March 7-11	Discussion	Groups
11	14-18	Discussion	Groups
12	21-25	Discussion	Groups
13	28-1	Fluorescence Experimental Design	Brucat
14	April 4-8	Discussion	Groups
15	11-15	Discussion	Groups
16	18-20	Classes End on Wed	

University Policy on Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

University Policy on Academic Misconduct

Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

We, the members of the University of Florida Community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity

Disclaimer for this document

Note: All aspects of course operations, including grading, course policy and policy execution, are subject to change at the discretion of the course instructor.