Biochemistry Laboratory CHEM 3820 Section 1

Prof. Michelle Knowles
Email: michelle.knowles@du.edu
Phone: 871-6698
Meeting time and location: Monday and Wednesdays 1-4:50 pm, SGM 209
Office: SGM 101 Email for times to meet
TAs: Emily Hager (MW, Emily.Hager@du.edu), Priyanka Aggarwal (TR, Priyanka.Aggarwal@du.edu), and Alec Feuerbach (TR, Alec.Feuerbach@du.edu)

Course Goals: The purpose of this course is to learn modern biochemistry laboratory techniques, how to write scientific papers, and give scientific presentations. In the last 4 weeks, we will perform a biochemistry research project.

Required Materials:

- Biochemistry Laboratory by Rodney Boyer
- A lab notebook with numbered pages, available at the bookstore
- All other materials (handouts, lab manual) will be posted on Canvas.

Absences: If you need to miss a day, tell me and all three TAs well in advance, then attend the other section if there is space. Note that starting in Week 3 (after MLK day), the TR section is the first to do experiments.

Grading:

A. Lab Reports: There are 4 lab reports due. All reports must be written in the format of a journal article (Abstract, Introduction, Materials and Methods, Results and Discussion, Bibliography).You must write your lab report and analyze your data INDEPENDENTLY! If two reports are identical in any way, including the same figures, both get zeros. You must print the lab report. Do not submit it via email.

B. Notebooks: See handout on how to keep a notebook. During the first week of lab I will have an example notebook that received full credit. I will collect and grade notebooks at the end of the term and one lab will be selected for grading.

C. Lab Participation and preparation: Be involved in lab and clean up when you are done. Lab preparation is graded critically. Prior to coming to lab you need to do the pre-labs and watch the pre-lab lecture through Canvas. Both will be posted on Canvas one week before they are due and pre-labs will be collected at the very beginning of lab.

D. Independent Projects: More details given in late January.

a. Group Plan (10 pts, due Day 1 of Module 4) this should address the following questions:
   i. How will tasks be split up amongst the 3-4 people?
   ii. What is the specific procedure you are following? References needed.
   iii. What reagents are needed (send me a link to a product if there is something unique)? If it costs a lot, then I may say no.

b. Updates (individual grade, 5 pts each) – due weekly, form on Canvas.

c. Final Report (individual grade, 50 pts): This is a journal style paper that should be written independently but using all of the group data. You should fully understand what other members did and tie the experiments together to tell a story and conclude something.

d. Presentations (group grade, 50 pts): One formal group poster presentation over the projects will be done in March during the last week of classes. Details will be given in class.

E. Exam: The exam will be given in Week 7 and covers the theory and application of protein purification, characterization and fluorescence spectroscopy that will be covered in labs 1-4. The text, discussion questions, data analysis (including linear fitting of data), and journal articles posted on Canvas will be covered.

F. Grading

Assignment	*points*
Prelabs(5, 10 pts each)	50
Lab reports (4, 50 pts each)	200
Independent Project Report and Updates	75
Poster Presentation	50
Exam	100
Lab Notebook	25
TOTAL	550

The lab, *including the balances*, must be cleaned up at the end of every session. If not, the entire class will lose points.

G. Accomodations: Students who have disabilities or medical conditions and who want to request accommodations should contact the Disability Services Program (DSP); 303.871.2372/ 2278; 1999 E. Evans Ave.; 4th floor of Ruffatto Hall. Information is also available online at www.du.edu/disability/dsp. Please do this *in advance* of the exam or other times that you may need appropriate accomodations.

H. Schedule MW – Biochemistry doesn't always conform well to a twice a week 4 hour lab. There are several times when you may need to stop in to check on the experiment, centrifuge, image a gel, etc. These times are noted in ***bold italics*** below. None take more than 30 m.

Week	*Day*	*Do in Lab*	*Due*	*Reading*
Module 1 – Protein Purification				
1	M	Lab 1A – Transform bacteria		1, 3D, 10A, 11AB
	T	***start overnight cultures and move plates to 4C (afternoon)***		
	W	Lab 1A – express protein	Prelab #1	4
	Th	***spin and freeze bacteria pellets***		
2	M	Lab 1B*- purify protein	Prelab #2	5
Module 2 – Protein Characterization				
	W	Lab 2	Prelab #3	7A, 3B
	F	*Turn in lab report by 5pm*	Lab report #1	
3	M	NO CLASSES!		
	W	Project planning and pour gels for Lab 3	Prelab #4, Lab Report #2	
4	M	Lab 3*		6**
	T	***Image gel after overnight in destain***		
Module 3 – Fluorescence Spectroscopy				
	W	Lab 4	Prelab #5	7B
5	M	Lab 4	Lab Report #3	
Module 4 – Independent Projects				
	W	Independent project	Project Plan	Primary literature
6	M	Independent project	Lab report #4	
	W	Independent project		
7	M	Independent project, Lab exam (1h)	Progress update	
	W	Independent project		
8	M	Independent project	Progress update	
	W	Independent project		
9	M	Independent project	Progress update	
	W	Independent project / Practice poster session		
10	M	Poster session		
W	W	Check out	Project report	

* = Long day!

** = only read 6B through page 186. I will not cover nucleic acid gel electrophoresis.