

Biochemistry Laboratory CHEM 3820 Section 1

Prof. Michelle Knowles

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Meeting time and location: Monday and Wednesdays 1-4:50 pm, SGM 209

Office: SGM 101 Email for times to meet

TAs: Alan Weisgerber Alan.Weisgerber@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 that you come up with.

Materials:

- OneNote – lab notebook kept online. Available to all students. This is required
- All other materials (handouts, lab manual) will be posted on Canvas.
- Optional reading material: Biochemistry Laboratory by Rodney Boyer. The chapters are noted in the syllabus as they correlate to the labs. Your Biochemistry lecture text book also has useful sections.

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 and what information must be included. Please share your online notebook with the TA and me. Notebooks will be graded randomly during the term by selecting any completed lab and evaluating what you have chosen to include.
- 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 lectures. Both will be posted on Canvas one week before they are due and pre-labs will be collected by me at the beginning of lab.
- D. Independent Projects:**
- a. Group Plan (due Day 1)
 - b. **Updates:** (individual grade)
 - c. **Report:** 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.

d. **Presentations:** 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

<i>Assignment</i>	<i>points</i>
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	500

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

G. Schedule

Week	Day	Do in Lab	Due	Optional reading
<i>Module 1 – Protein Purification</i>				
1	W	Lab 1– Pipet 101, Spectroscopy introduction		
2	M	Lab 2A - Transform bacteria	Prelab #1	1, 3D, 10A, 11AB
	Tues.	<i>move plates to 4C (afternoon) and start overnight cultures</i>		
	W	Lab 2B – express protein		4
	Thurs	<i>spin and freeze bacteria pellets</i>		
3	M	<i>NO CLASSES</i>		
	W	Lab 2C- purify protein	Prelab #2	5
	F	Turn in lab report by 5pm*	Lab report #1	
<i>Module 2 – Protein Characterization</i>				
4	M	Lab 3	Prelab #3	7A, 3B
	W	Lab 4A, planning projects	Prelab #4	
	F	Turn in lab report by 5pm*	Lab report #2	
5	M	Lab 4		
<i>Module 3 – Enzyme kinetics</i>				
	W	Lab 5A	Prelab #5	3B, 6
	F	Turn in lab report by 5pm*	Lab report #3	
6	M	Lab 5B		
<i>Module 4 – Independent Projects</i>				
	W	Independent project	Project Plan	
	F	Turn in lab report by 5pm*	Lab report #4	
7	M	Independent project		
	W	Independent project	Progress update	
8	M	Independent project, out of town MKK		
	W	Independent project, lab exam	Progress update	
9	M	Independent project		
	W	Independent project	Progress update	
10	M	Independent project		
	W	Independent project		
11	M	Poster session	Lab report #5	

