

# Biochemistry Laboratory CHEM 3820

Asst. Prof. John Latham

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Meeting time and location: Tuesdays and Thursdays 1-4:50 pm, SGM 209

Office: SGM 251 *ad hoc* meetings

TAs: TBD

**Course Goals:** This course will provide students the opportunity to learn and use modern biochemical techniques, to learn how to write a scientific paper, and to give a scientific presentation. Moreover, students will be provided an opportunity to perform an independently driven research project during the final five weeks.

## Required Materials:

- Biochemistry Laboratory Manual
- Access to the interwebs
- All other materials (handouts, lab manual, lecture videos, experiment videos) will be posted online on canvas

## Grading:

- 1) **Lab Reports:** There are 3 lab reports due. All reports must be written in the format of a journal article (Abstract, Introduction, Materials and Methods, Results and Discussion, References). Follow the rubric.

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.

- 2) **Notebooks:** All experiments will be kept in composition notebooks. **Notebooks should contain adequate procedures prior to coming to class.**
- 3) **Pre-Labs:** Prelab quizzes are posted on Canvas and are required to be completed before class.
- 4) **Lab Procedures:** You are responsible for watching the procedural videos and extracting the relevant information to formulate your own procedures **prior to class**. Your TA/instructor will check your online notebook before each class to ensure that your procedures are present. Failure to do so will result in you being turned away from the class and earning a zero for that lab report. Once the lab has begun, and your TA has signed off on your procedures, it is acceptable to watch the lab videos only when absolutely necessary.
- 5) **Lab Participation:** Be involved in lab and clean up when you are done. Participation is graded subjectively – so look (and be) busy. Participation points will be deducted if you are found to be on social media, playing games, excessively using iMessage, etc. Most importantly, it's hard to participate when you are not here...show up to class.

- 6) **Projects:** Work with a partner to characterize the new mystery enzyme you have. With your partner, plan your final 4 weeks of class and think through control experiments. In lab, you should work mostly alone or in a tag-team sort of way to maximize productivity. The following assignments pertain to the project:
- Group Plan
  - Individual Updates
  - Report:** This is a journal style paper that should be written independently but using all of the group data. You should fully understand what your partner did.
  - Presentations:** One formal presentation over the projects will be done in March during the last full week of classes. Details will be given in class.
- 7) **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.
- 8) **Presentation:** 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. *Follow the Rubric.*

## Grade Distribution

<i>Assignment</i>	<i>Points</i>
Biosafety	30
Prelabs (6, 10 pts each)	60
Lab procedures (6, 10 pts each)	60
Lab reports (3, 50 pts each)	150
Independent Project Plan (10 pts), Updates (15 pts) and Report (50 pts)	75
Presentation	50
Participation	50
Exam	100
Lab Notebook	75
TOTAL	650

## Schedule

Week	Tue	Thurs	Due
7 Jan	Biosafety	Plasmid Isolation and Preparation	Certificates
14 Jan	Transformation	Protein Expression*	Prelab 1 & 2
21 Jan	Protein Purification* (Groups 1-3)	Protein Purification* (Groups 4-6)	Prelab 3
28 Jan	Bradford	Prepare SDS-PAGE	Prelab 4&5 Lab Report 1
4 Feb	Kinetics (Groups 4-6)*	(Kinetics (Groups 1-3))*	Prelab 6
11 Feb	Project	Project	Lab Report 2
18 Feb	Project	Project	
25 Feb	Project	Project	
4 Mar	Project	Lab Final	Final Lab Report
11 Mar	Lab Clean Up	Poster Session TBD	

\* = Long day!