Biochemistry Lab, Fall 2018 (CHE4611)

Purchase College

Professor Information

Elizabeth Middleton
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Office hours: Mon and Thu 2:15 – 3:00pm, Wed 12:00 – 1:00pm

Course Meetings

Wednesdays 8:00am – 11:40am
Meet in NS 3046 (Einstein Corner) for a prelab lecture
Experiment will be carried out in NS 3032.

Required Texts and Materials

- Experiments will be posted on the course Moodle site for you to access and print.
- You are required to obtain a lab notebook for this course. It should be a carbon copy notebook that produces white or other light colored copies that tear out.
- You should also bring your own set of lab goggles to wear if you have them. Extras will be available to borrow.
- You should bring a calculator, pen, and drawer key (provided week 1) to lab every week.

Course Description

This course will provide you with a base of experience conducting biochemical experiments. You will perform techniques such as column chromatography, protein purification, enzyme assays, gel electrophoresis, and UV spectroscopy. You will practice good laboratory technique, keep an organized notebook, and write laboratory reports.

Student Disabilities

Students with documented physical, learning, psychological and other disabilities are entitled to receive reasonable accommodations. If you need classroom or testing accommodations, please contact the Office of Disability Resources at ORD@purchase.edu or in person in the Student Services Building, Room 317A. Students must also inform the professor **at the beginning of the semester** so arrangements can be made.

Communication

The best way to get in touch with me is by stopping by during office hours or by email. You can also call the office phone or set up an appointment to meet at another time. You are expected to check your Purchase email daily and the class Moodle site regularly for important information about the course.

Purchase College Academic Integrity Policy

The purchase college academic integrity policy (www.purchase.edu/policies/academicintegrity.aspx) explicitly forbids cheating, plagiarism, and other forms of academic dishonesty. Plagiarism is the appropriation or imitation of the language, ideas, and/or thoughts of another person and the representation of them as one's own original work. Students are responsible for familiarizing themselves with the definition of plagiarism and acceptable methods of attribution. The *minimum* recommended sanction for an academic integrity violation is a failing grade on the assignment.

Students who have any questions or doubts about whether any activity is academically permissible should check with the instructor.

Lab Partners

You will each select a lab partner and work with that person for the entire course in the lab, though your professor may make changes to the lab partners during the semester. You and your partner will produce and turn in **separate and distinct notebooks and lab reports**, including unique discussions, calculations, graphs, etc.

Collaboration

You will work with a partner for all lab experiments. You are welcome to help your fellow classmates on pre-labs and lab reports. However, **you should not copy work directly from someone else and should never submit a notebook or lab report that is identical or has identical portions to that of another student**. All calculations, graphs, discussions, etc. should represent your unique work in the course. **If you have any questions regarding this policy, please speak to Prof. Middleton.**

Attendance

- Attendance in this class is required for **every** session.
- It is critical that you arrive on time so you don't miss important instructions during prelab and you can finish each experiment on time. **Late arrivals will affect your participation grade.**
- You must arrive for lab prepared for the experiment: this includes a completed pre-lab in your notebook and proper lab attire.
- In the event of an emergency that prevents you from attending lab, you must alert the professor immediately of your absence and provide documentation of the emergency. We will attempt to arrange a make-up lab session at the soonest opportunity.

Schedule of Experiments

Updates to the schedule will be posted on the course Moodle calendar and handouts for experiments will be available for download on Moodle.

Date(s)	Experiment
8/29	Lab orientation and check-in
9/5	Acid-base properties of amino acids
9/12, 9/19, 9/26, 10/3	Isolation and characterization of lactate dehydrogenase
10/10	Protein gel electrophoresis
10/17, 10/24, 10/31	HPLC lab
11/7	No lab
11/14	Enzyme kinetics of carboxylesterase and Check-out
11/21	No lab (Thanksgiving week)

Remaining lab dates do not have experiments scheduled but should be kept free in case the schedule is changed for any reason.

Course Requirements

Grade Distribution

Course Requirement	Percentage
Attendance and participation	15%
Notebook	40%
Lab reports (3)	45%

Formal lab reports will be completed for three experiments. Details about lab reports will be provided separately.

Final Grades

Highest	Lowest	Letter Grade
100	93	A
92.99	90	A-
89.99	87	B+
86.99	83	B
82.99	80	B-
79.99	77	C+
76.99	73	C
72.99	70	C-
69.99	60	D
59.99	0	F

Attendance and Participation (15%)

On Time Arrival (3 points)	**Points earned**
On time (or early!)	**3**
< 5 min late	2.5
5-10 min late	2
10-20 min late	1
> 20 min late	0
Safety (5 points)	**5**
Appropriate dress (including goggles)	1
Care and use of glassware and equipment	1
Handling of all reagents	1
Cleanliness of bench and shared lab space	1
Proper disposal of waste and storage of reagents	1
Experiment (5 points)	**5**
Completed experiment efficiently	1
Followed all steps in procedure successfully	2
Obtained high quality results	2
Behavior (2 points)	**2**
Stayed focused for entire lab period	1
Collaborated well with lab partner and others	1
Total	15

Notebook (40%)

Your lab notebook is the permanent record of everything you do in lab and should contain enough detail that another student could replicate your experiments. The information in your notebook includes portions written before, during, and after lab. You should always write in pen, write legibly, and keep your notebook organized. You should never tear an original page out of your lab notebook; simply cross out any mistakes and keep going. Clearly write your name on the front cover of your notebook. If you have questions about what information or how much detail to include, please ask!

A good rule of thumb: You should be able to complete the lab using only your lab notebook, without referencing the lab handout.

Before lab

Before lab each week, you should thoroughly read the procedure for the lab and put the following information in your lab notebook. For multi-week labs, you only need to complete the pre-lab one week at a time. Your professor or LA will sign off on your pre-lab notebook before the pre-lab lecture.

- **Date**
- **Title**
- **Partner's name**
- **Purpose**: What do you intend to accomplish by performing this lab? Why is it important? What will you learn? Generally 2-3 sentences is sufficient. For multi-week labs, be sure your purpose is specific to that week, and does not simply apply to the lab overall.
- **Materials**: List all reagents that will be used, any known hazards of these chemicals, calculations for preparing solutions (if instructed), and any other useful information. You should consult the MDS document for each chemical to learn about its hazards.
- **Methods**: List each step you will take to carry out the procedure as an instruction (Example: Pipet 1mL of buffer into the test tube). You might find it useful to number the steps or write them as a bulleted list. Do not copy directly from the experiment handouts; practice putting the procedure in your own words when possible so you best understand what you'll do in lab. You should write your methods on the left side of the page, leaving room to add observations/results on the right.

During lab

Each week, you will record your observations and experimental outcomes in the results section as you carry out the experiment and interpret those results in the discussion section.

- **Results and Observations**: note if steps were successfully completed, any deviation from protocol, exact volumes or masses used, color change or precipitation, any data collected (numbers, drawings, descriptions), calculations, charts or graphs, etc. These may be placed next to the relevant step in your methods or at the end of the methods if you run out of room.
- **Discussion**: Write 1-2 paragraphs discussing your findings and/or what you accomplished that week. You should summarize your results, explain why they are significant, discuss your progress towards an overall goal for a multi-week experiment, note any possible causes of unexpected results, explain any sources of error, etc. If any specific discussion questions are provided for a particular lab, be sure to address them!
- **You should have significant results and/or observations, as well as a general lab discussion, recorded at the end of each week of lab, even if you haven't completed all weeks of the lab.**

After lab

At the end of each lab, you will turn in carbon copies from your notebook for grading, including all of your work from before and during lab. Your discussion may be due at the end of the lab period or at the beginning of lab the next week, depending on instructions from your professor each week.