BL4820 Biochemistry Techniques

Grading and Lab Reports

Grades will be based on your lab reports worth a total of 90 points and your lab notebook, which must be turned into the T.A. for evaluation during the 8th week, accounts for the other 10 points. The T.A. will also evaluate your overall improvement in lab technique and your general attitude toward your lab work. Grades will be based on the following scale: A = 90+ points; AB = 85 to 89 points; B = 70 to 84 points; BC = 60 to 69 points; C = 40 to 59 points. Lower grades are not usually given in this course.

Lab reports are due on the following dates and must be turned in by Friday, 5:00 PM of the week due:

Report #	Week Due	Experiment Name	Point Value
1	2	Protein Assay	15
2	4	Phosphatase Properties	35
3	7	GOT Purification	40

COURSE OBJECTIVES:

I wish to introduce you to some of the techniques used in biochemical labs and to help you to improve your lab skills, especially in obtaining quantitative results and reporting them. You are not expected to accomplish all the experiments with perfection, but you will be graded on overall lab performance.

LAB NOTEBOOKS:

You should buy a bound notebook and use it to record pre-lab notes and the data you collect in the lab. Copies of data you get from your lab partners can also be pasted into this lab notebook. When you are working as teams in the lab, you should obtain the data from your lab partners, which they record in their notebooks, and transfer it to your notebook so that you will have it when you are preparing your lab report.

If you come to lab prepared to do the experiment being done that week, meaning you have read over the text material and gained an idea of what procedures are to be done in the lab during the experiment, you will spend less time in the lab and get more out of the course.

Do your best to avoid making errors when recording your data and transferring data of your lab partners.

YOUR LAB NOTEBOOK WILL BE GRADED AT THE END OF THE COURSE!

LAB REPORTS:

Lab reports are an essential part of this course and represent the major mechanism for grading your work!

A total of five lab reports are required to pass the course and should be turned in on the schedule provided. Lab reports must be prepared on a computer using a word processor (Word etc.). All graphs must be drawn on a computer using a graphing program such as a spreadsheet program (ie. Excel etc.). Some tables may be prepared by hand-writing since these are sometimes difficult to prepare on a computer. Be sure that all graphs are properly labeled and represent the data well.

The main purpose of the lab report is to show me that you understand what you did in the lab and that you know how to do the calculations associated with the experiment, which are presented in the report!

Lab Reports must be in your own words...see description of plagiarism to avoid problems (last page of this handout)

If many of the same type of calculation are being done, it is OK to use just one example of such a calculation. Be sure that the lab report includes all aspects of the experiment, some of which may be changed from what is described in the text. I also want you to demonstrate in the lab report that you thought about the experiment and have made an intelligent assessment of your results. Since some of your results will probably come out differently than you think they should, you should report the results you find and then explain what you think might have caused them to be in error etc. But try to avoid constantly making excuses when you have no logical way to know if you did something wrong or not.

LONG LAB REPORTS ARE NOT NECESSARY AND SHOULD BE AVOIDED!

LAB REPORT STYLE:

The style of your lab report is important since it sets a framework for your presentation.

The lab report must have the following sections:

- **INTRODUCTION:** stating the objectives of the experiments and citing the portion of the text you used to guide you in doing the experiment. Major changes from the lab manual which were done in the lab should be mentioned here. Less important changes such as in the details of a particular method should be listed in the METHODS section. **Show chemical reactions involved in the experiment in the Introduction and be sure that the chemical structures are given for these reactions!**
- **METHODS and EXPERIMENTAL DESIGN: Begin the methods section with a description of the Experimental Design. Then:** briefly describe the methods used. This may be done by referring to the sections of the lab manual used to do the procedures in the lab, but deviations from the text should be mentioned here.
- **RESULTS:** report what you found, including the data collected by your partners. If you are aware of mistakes made in doing the procedures, these should be reported here.
- **DISCUSSION:** briefly summarize the results and then describe what you think they mean. The negative influence of mistakes made by you and/or your partners in doing the lab should be mentioned here if you think the results deviate from what you expected to find. But do not constantly say things like: "pipetting errors were probably made so that these results can not be considered correct".

How to write the Discussion: Try to be thoughtful and present some interpretation of the experimental results. This can be done by putting your results in the context of introductory material I present in class as well as the general discussion presented in the text prior to the experimental section or specific discussions presented in the text associated with the experiment. Avoid lengthy discussions of generalities; make specific points that are relevant to the report and be concise.

LAB REPORT GRADING:

I will grade the lab reports and return them to you as soon as possible. If you do not get the points you think you deserve on a report, you should come to see me to discuss it. I am willing to help you prepare better lab reports and get those points you think you deserve. In some cases, I may even ask you to write a revised report.

LAB SAFETY:

1. **LAB SAFETY VIDEO:** A short video will be shown at the beginning of your first lab.
ALL STUDENTS MUST SEE THIS VIDEO PRIOR TO STARTING ANY EXPERIMENTS
2. **Eating or drinking or smoking are not allowed in the lab.**
3. **Mouth pipetting is not allowed!** USE pipetters or pro-pipettes with glass pipettes at all times.
4. **HAZARDOUS CHEMICALS:**

Many of the chemicals used in this course constitute a hazard to you; therefore, you must be aware of these hazards before you begin to handle chemicals. The lab text identifies those chemicals with the greatest hazard in an experiment. In my lectures I will also call your attention to hazardous chemicals being used in that week's experiment. In general, you will be using solutions of acids and bases and you should treat them with appropriate caution.

5. **EYE PROTECTION:** The use of safety glasses is required in this course and you must provide them.
6. **SAFETY DEVICES:** A fire extinguisher is located near the door in the lab and you should be sure you know where it is and how to use it. A safety shower is located in hall and you will be shown the location at the beginning of the first lab. The fire alarm and emergency exits are in the hall and these will be identified for you in the first lab session.
7. **LAB CLOTHING:** Lab coats are not required for this course, but are recommended. Long hair must be constrained and loose clothing is not allowed. A near-boiling water bath is used in Expt. 3 in the labs during Week 4; special care should be used to avoid burning yourself with the hot water.
8. **BROKEN GLASS:** IF you break glassware or pipettes, do not use them further. Place broken glass in the container marked "GLASS WASTE". Do not put broken glass in the normal waste container.
9. **WASTE DISPOSAL:** All liquid wastes are to be poured down the drain in the main lab sink while running the water.
10. **NO ONE IS ALLOWED TO WORK ALONE IN THE LAB!!!** All experiments are to be conducted in the lab and in the allotted lab periods. The TA or I will be present at all times. You can not work in this lab at any other time. If a lab needs to be made up due to an excused absence, I will arrange for you to meet with a different lab section.

IN AN EMERGENCY CALL: MTU PUBLIC SAFETY -- 2216 -- USE PHONE IN HALL