

BIOL/CHEM 328 LAB

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Course Information:

- Laboratory on Fri 1:15-4:15 in HOSCI 209

Course Goals

- To gain hands-on experience with (and understand the basic theory behind) some of the laboratory methods used to isolate and investigate biochemical systems
- To become familiar with a variety of data bases that contain information about the structure and function of these biological molecules (bioinformatics)
- To develop more problem-solving and critical thinking skills in the laboratory
- To summarize experimental procedures, acquired data, analysis, and thoughtful discussion in an open access electronic format, a Wiki!

Required Materials**Black Board Web Site**

Throughout the semester laboratory procedures, pertinent links, reminders and other material will be posted to the course blackboard page. Please access this page early and often!

Attendance:

Your presence is expected at all laboratories. As a reminder, the college policy on attendance can be found at <http://www.moravian.edu/studentLife/handbook/academic/academic.html> If you anticipate an unavoidable absence, please *notify me ASAP before* you are absent. Makeup labs are given at the discretion of the instructor.

Academic Honesty:

Please be familiar with the college policy on academic honesty <http://www.moravian.edu/studentLife/handbook/academic/academic2.html> Because this course involves small group learning, each student may exchange experimental details and data with her/his lab partner and classmates. You are encouraged to discuss work with others, but merely copying answers is not acceptable.

Learning Differences: Students should contact the Office of Learning Services for disclosure of a learning difference and to request appropriate amendments to this course <http://www.moravian.edu/studentLife/handbook/academic/academic4.html>

Grading

Your performance in, analysis of, and summary writing of laboratory experiments are the basis for a significant portion of your assessment in this course (**25% of your course grade**). Since I can only assess your work in lab if you are present, and you will only have writing material for your lab documents if you actually perform the experiments, you should be present for and intellectually active every laboratory meeting of this course.

Part of your lab grade will come from how well you **perform** in lab. Factors affecting this grade include your preparation, safety, work efficiency/technique, and equal task-sharing with your partner in the lab. To prepare for lab each week, please:

- Read each experiment before coming to lab (procedures will be posted to course web site ahead of time)
- Have a general idea of what you will do in lab that day (and in what sequence)

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Labs: Twelve laboratory experiences (25 pts for each lab) consisting of:

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|---|-------|
| • Writing of assigned Wiki section | 17pts |
| • Being prepared, group participation, and working safely | 4pts |
| • Lab quiz, at beginning of the next weeks lab | 4pts |

Your *lowest two lab scores will be dropped* at the end of the term.

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| • 10 lab scores | 250pts |
| • Presentation on Proteomics Project | 50pts |
| Total | 300pts |

Each student will record lab notes for this course. You can choose to use either a hard-bound notebook, or use an **electronic laboratory notebook (ELN)**. The ELN is typically a MS-word file with digital ink. If you choose ELN, the document should be saved on the local T: drive incase your computer crashes during lab, and you will need to upload your ELN to a Lab Journal on Bb to have access to your notes outside of lab.

- Write legibly. Do not erase any mistakes. You may cross-out erroneous entries but they must remain legible. Be sure to explain any such errors.
- Write directly into your notebook. When preparing for lab, reading literature for lab, and during lab, be sure to take notes directly into your notebook. A clear outline format in your notebook, without full sentences, is just fine. Be concise!
- Include references. If you find an important/pertinent piece of information someplace else (such as in a book, catalogue, journal article, or on a reputable web site) copy the reference information directly into your notebook – Include enough information so you could find it again if you had to!
- Format. The notebook entry for an experiment will generally include:
 - TITLE, DATE, LAB PARTNER.
 - PROCEDURE. Outline what you DID in lab, not what you SHOULD HAVE done. Note any modifications of the procedure given in the lab handout.
 - RAW DATA. Record all data directly into your notebook or an Excel spreadsheet and never on loose paper. Data should be clearly and neatly labeled.

Lab Wiki: The class will develop a Wiki page on blackboard for each week of lab. The Wiki will have seven parts. See <http://usefulchem.wikispaces.com/Exp257> for an example

1. Summary Figure and Objective
 - a. A figure that is embedded into the wiki that summarizes the lab for that week
 - b. Powerpoint can be a useful tool for combining pictures and text.
2. Abstract/Tweet
 - a. In 140 characters or less, describe the lab and give the most pertinent result(s)
3. Introduction

A brief introduction that should not be just cutting and pasting the intro provided with the laboratory.
4. Procedure
 - a. A general description of the procedure should be placed in this section along with a link to the lab handout
 - b. Detailed additions or modifications to the lab procedure should be noted here

BIOL/CHEM 328 LAB**5. Results**

- a. Groups will upload any shared data to this section before leaving lab. For labs that require Excel calculations, spreadsheets will also be uploaded to this section.
- b. Annotated figures and/or graphs of class data go into this section and are the responsibility of this group

6. Discussion

This section will discuss the data and make summary conclusions about the lab.

7. References with electronic links

Links should take a reader **directly** to the journal or web sites. Note if the journal is available at Moravian, you need to link directly to it, not to another source i.e.

Each week your group will be responsible for writing your section of the Wiki by 5pm on the Wednesday following lab.

The Wiki will be closed to editing on Wed evening for grading.

TENTATIVE Laboratory Schedule

<u>Friday</u>	<u>Laboratory</u>		SPRING BREAK
1/20	Membrane Permeability	3/9	
1/27	Membrane Transport 1	3/16	Proteomics 1
2/3	Membrane Transport 2	3/23	Proteomics 2
2/10	Enzyme Coupled System	3/30	Proteomics 3
2/17	Thermodynamics by NMR	4/6	EASTER BREAK
2/24	NMR and GCMS of Glycolysis	4/15	Proteomics 4
3/2	Maldi Protein Identification	4/22	Proteomics 5
		4/29	Presentations