

**Biology 212 Laboratory (1cr.)  
Spring 2008  
Fridays 2:00 LS 238**

Dr. Kristin Hall, Ph.D.

LS-208

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**Office hours:**

Wednesdays 1:30-2:30

Fridays 12:30-1:30

or by appointment

**Required materials:**

Cell Biology Laboratory, Caprioglio and Caprioglio, Bent Tree Press 2008  
(ISBN 978-60250-049-5)

Lab notebook: bound (no spiral) quad-ruled Comp Book

**Course Policies:**

1. Students must come to lab prepared. This includes reading the entire lab exercise and completing the pre-lab portion in the laboratory notebook.
2. Arrive on time as important announcements are often made before the laboratory work begins. This lab meets only once/week thus there are no opportunities for make up labs.
3. Laboratory safety is of utmost concern. There may be idle time during incubations or centrifugations, but this is no place for practical jokes or clowning around. Also, cell phones may not be used in the lab.
4. Students must clean the bench area before and after each experiment.
5. Students must work cooperatively and respectfully.
6. Respect the equipment used in the lab. Some of the equipment comes from faculty research labs and must be returned in good, working condition.

**Grading:**

Lab notebooks (5 assignments graded, 20 pts ea)	100 pts
Formal lab reports (2 @ 40 pts ea)	80 pts
Abstracts (2@10 pts ea)	20 pts
Experimental design for Lab 6	20 pts
Exams (2 @ 50 pts ea)	100 pts
Oral Presentations on Bioinformatics	<u>30 pts</u>
	350 pts total

Scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=59% and below

### **Lab Notebook Purpose and Guidelines:**

When working in a life sciences laboratory, careful and accurate notes are essential. In the case of establishing patents, notebooks become legal evidence and can be presented in a court of law. In other cases, projects will be continued after one graduates or leaves a lab group so good notes help the newbies, for example, by avoiding repeating your two month series of experiments to optimize a particular technique. In some industries such as pharmaceuticals companies, lab notebooks are signed and locked up at the end of every day. Therefore, to gain experience for your future in biology each student will maintain a bound notebook (Comp Book with quad ruling).

General guidelines:

Lab notebooks should always be kept in blue or black ink and each entry of work must be dated using the month name or abbreviation (January or Jan. not numerical like 1/4/08 as this format is confusing for people in other parts of the world). Errors may be neatly crossed-out with a single line, but White-out fluid or correction tape is not acceptable and pages should never be removed.

Notebooks will be collected for grading at several points during the semester as indicated on the course calendar. Handwriting must be legible for grading. Be sure to have your name and course number on the front cover. It is a good idea to put your name and contact information inside in case it gets left behind in the lab.

Format of Lab Notebook:

#### Table of Contents

1. Leave the first page (or two) blank for a table of contents. Then add an entry with the title and corresponding page numbers for each experiment.

#### Pre-Lab *\*this will be done before entering the lab*

2. For each experiment, begin with the title of the experiment. These should be detailed but brief.
3. Objective is a brief statement of what you are doing and the reason for the experiment.
4. A description of the experiment should describe the protocol to be used in your own words.

Materials and Methods; Results *\*this portion is to be written during the lab period while doing the experiment*

5. Materials and Methods is a detailed record of every step in the experiment. Be sure to include any calculations performed during the protocol (such as dilutions or when making solutions). Write this as you go because there will be too many details to wait until the end of lab. Include all variations from the standard protocol, whether intentional or accidental.
6. The results section begins with data collected and should include values for controls. The raw data would include the measurements generated in the experiment. In some cases, calculations using the data may be performed outside of the lab period. Printouts or photos may be neatly taped into place when applicable.

Discussion; Conclusion *\*this section may be completed after the lab*

7. A good discussion will interpret the results and talk about their significance as well as suggest any future experiments for the project to progress. If there were any suspected problems with reagents or equipment that could have impacted the results, they should be noted in this section.
8. The conclusion should summarize the discoveries of the experiment in one to two sentences.

#### Grading of Lab Notebooks:

The notebook assignments will be worth 20 points and will be evaluated according to the following:

Title	2 pts
Objective	2 pts
Mat/Meth	4 pts
Results	4 pts
Discussion	6 pts
Conclusion	2 pts

Great resources on laboratory notebooks:

<http://www.swarthmore.edu/NatSci/cpurrin1/notebookadvice.htm>

<http://www.ruf.rice.edu/~bioslabs/tools/notebook/notebook.html>

<http://www.colorado.edu/mcdb/MCDB3140/notebooks.html>

At the Bench: A Laboratory Navigator Kathy Barker, ISBN#0-87969-523-4

### **Formal Lab Reports**

Another important aspect of good research is communication of results. During this course, two lab report papers will be assigned (Lab 2/3 and Lab 6).

The lab report should be 2-3 pages in length and typed. The material should be organized into the following sections:

1. Title
2. Abstract
3. Introduction
4. Materials and methods
5. Results
6. Discussion
7. Literature cited

An abstract is a summary that is included with scientific papers to give readers a chance to evaluate the relevance or time worthiness of reading the entire paper. The challenge of an abstract is that they must be concisely written, no more than 200 words. As this is often the portion of lab reports students struggle with, abstracts will be collected and reviewed before the lab reports are due.

Resources on Lab Reports/Scientific Papers:

Writing Papers in the Biological Sciences, Victoria McMillan ISBN#0-312-11504-0

<http://www.mhhe.com/biosci/genbio/maderinquiry/writing.html>

<http://www.studygs.net/labreports.htm>

**Bio 212 Lab Schedule  
Spring 2008**

<b>Date</b>	<b>Lab Exercise</b>	<b>Assignment Due</b>
18 Jan 08	Introduction Lab 1: Measurements/Data Analysis	Pre-lab #1
25 Jan 08	Lab 2: DNA isolation	Notebook for Lab 1
1 Feb 08	Lab 3: DNA quantification Lab 9: DNA isolation from cheek cells	
8 Feb 08	Lab 9: Gel electrophoresis of PCR	Abstract for Lab 2/3 report
15 Feb 08	Lab 4: Chloroplast Isolation	Lab 2/3 report
22 Feb 08	Lab Practical Exam #1	
29 Feb 08	Lab 5: Hill Reaction	
7 Mar 08	Lab 6: Experimental Design: Modified Hill Reaction	Notebook for Labs 4/5 Experimental Design for Lab 6
14 Mar 08	Lab 7: Bioinformatics	Abstract for Lab 6 report
21 Mar 08	Lab 8: Microscopy	Lab 6 report
24 Mar 08	Spring Break	
4 Apr 08	Lab 8: Microscopy	
11 Apr 08	Oral reports on Bioinformatics	Notebook for Lab 8
18 Apr 08	Lab Practical Exam #2	