

Cedar Crest College

Biology 121, Principles of Biology Lab, Fall 2008

General Course Information

Section	Instructor	Day	Time
01	Dr. Brian Misanko	Tue	8 - 11 AM
03	Dr. Alan Hale	Wed	1 - 4 PM
04	Dr. Brian Misanko	Thu	8 - 11 AM
05	Dr. Amy Reese	Thu	1 - 4 PM
06	Dr. Kent Fitzgerald	Mon	1 - 4 PM
70	Dr. Alan Hale	Tue	4 - 7 PM
72	Prof. Judith Malitsch	Thu	4 - 7 PM

Number of Credits: 1

Required Materials: Carbonless duplicate lab notebook from the bookstore designated for BIO 121; do not use a different notebook.

Lab coat.

Metric ruler with millimeter resolution.

Course Objectives, Outcomes and Assessment

1. At the completion of the course, you will know how to perform essential lab methods and how to interpret experimental data. You will demonstrate the ability to maintain a proper lab notebook and to perform essential lab calculations (such as those required to make solutions with multiple ingredients and to perform straightforward statistical analyses). Notebook entries will be regularly graded by your instructor. Likewise, your ability to interpret data will be assessed by assignments. You will also take two lab exams that will assess your ability to perform essential calculations and to interpret the kinds of data that you will be collecting throughout the course.
2. At the completion of the course, you will know how to prepare yourself in advance for lab procedures. The handouts include information with which you should be familiar before attending lab (*i.e.*, key words, introductory material). Prior to the start of each of the nine lab exercises, you will take a quiz on your advance preparation.
3. At the completion of the course, you will know how to design an experiment to test a specific hypothesis. As part of Lab 4, you will design an experiment to test a hypothesis regarding the relationship between cell division and an environmental variable. You will then carry out the experiment and interpret the data. Both the experimental design and the data analysis are graded.

Lab Schedule

Week	Dates				Lab, Assignments, Quizzes, and Exams (graded work indicated with →)
1	Mon Aug 25	Tue Aug 26	Wed Aug 27	Thu Aug 28	1.1: Microscopy and Measurement Lab introduction, policies, and safety → Open notebook quiz
<i>Week of Labor Day, Sep 1-5: No Labs</i>					
2	Mon Sep 8	Tue Sep 9	Wed Sep 10	Thu Sep 11	1.2: Microscopy and Measurement: Cells and Organisms → Quiz 1 (25 pts) → Notebook pages for Lab 1 (30 pts)
3	Mon Sep 15	Tue Sep 16	Wed Sep 17	Thu Sep 18	2.1: Diffusion and Osmosis → Quiz 2 (25 pt) → Assignment 1 due
4	Mon Sep 22	Tue Sep 23	Wed Sep 24	Thu Sep 25	2.2: Diffusion, Osmosis and Membrane Potentials → Quiz 3 (25 pts) → Notebook pages for Lab 2 (30 pts)
5	Mon Sep 29	Tue Sep 30	Wed Oct 1	Thu Oct 2	3.1: Photosynthesis: Chloroplasts → Quiz 4 (25 pts) → Assignment 2 due (30 pts)
6	Mon Oct 6	Tue Oct 7	Wed Oct 8	Thu Oct 9	3.2: Photosynthesis: Photopigments → Lab midterm exam (125 pts) → Notebook pages for Lab 3 (30 pts)
<i>Fall Break, Oct 11, 12: No Monday and Tuesday labs</i>					
7	Wed Oct 15	Thu Oct 16	Mon Oct 20	Tue Oct 21	4.1: Respiration: Experimental Design Workshop → Assignment 3 due (30 pts)
8	Wed Oct 22	Thu Oct 23	Mon Oct 27	Tue Oct 28	4.2: Respiration: Experimental Procedure → Quiz 5 (25 pts) → Notebook pages for Lab 4 (30 pts)
9	Wed Oct 29	Thu Oct 30	Mon Nov 3	Tue Nov 4	5.1: Meiosis and Mendelian Genetics: Flies → Quiz 6 (25 pts) → Assignment 4 due (50 pts)
10	Wed Nov 5	Thu Nov 6	Mon Nov 10	Tue Nov 11	5.2: Meiosis and Mendelian Genetics: Corn → Quiz 7 (25 pts) → Notebook pages for Lab 5, except fly exp (30 pts)
11	Wed Nov 12	Thu Nov 13	Mon Nov 17	Tue Nov 18	6.1: Molecular Genetics: DNA and PCR → Quiz 8 (25 pts) → Assignment 5 due (30 pts)
12	Wed Nov 19	Thu Nov 20	Mon Nov 24	Tue Nov 25	6.2: Molecular Genetics: Gels and GMO debate → Quiz 9 (25 pts) → Notebook pages for Lab 6 (50 pts) → Assignment 6 due (30 pts)
<i>Thanksgiving Break, Nov 26, 27: No Wednesday and Thursday labs</i>					
13	Mon Dec 1	Tue Dec 2	Wed Dec 3	Thu Dec 4	→ Lab Final exam (150 pts) → Notebook pages for Lab 5, fly exp (30 pts) → Notebook Table of Contents (20 pts) → Assignment 7 due (50 pts)

Grading and Lab Exercises

Important Note: BIO 121 Lecture and BIO 121 Lab grades are assigned separately.

Point Distribution:

- 225 points for 9 quizzes. Quizzes will be given at the start of every lab session, with the exception of the first week of lab and two weeks in which lab exams are given.
- 250 points for lab notebook. Unless otherwise stated by your instructor, duplicate copies of notebook entries will be collected at the end of each lab meeting.
- 250 points for lab assignments.
- 275 points for lab exams (midterm and final).

Grading: The final course grade is based on points earned (out of a maximum of 1,000)

A	≥930	C+	≥770	F	<600
A-	≥900	C	≥730		
B+	≥870	C-	≥700		
B	≥830	D+	≥670		
B-	≥800	D	≥600		

Student Responsibilities

Attendance: You are required to attend the lab section for which you are scheduled.

- If you must miss lab because of a Cedar Crest-sanctioned activity, you must provide documentation *in writing*, in advance, using an official form; otherwise, your absence will be considered unexcused. You must make arrangements with both your regular instructor and the instructor of an alternative lab session to attend lab. Be aware, however, that some lab exercises extend over multiple weeks and that you will usually have a lab partner. In this situation, you must discuss with your regular instructor how this will be handled.
- If you must miss lab for a legitimate, but unforeseen, medical or personal emergency, inform your instructor as soon as possible; your absence will be considered unexcused without notification from the office of the Dean of Student Affairs. If possible, you should make arrangements with both your regular instructor and the instructor of an alternative lab session to attend lab. Be aware, however, that some lab exercises extend over multiple weeks and that you will usually have a lab partner. In this situation, you must discuss with your regular instructor how this will be handled.
- If your absence is not excused, you will forfeit points for notebook entries and assignments associated with the missed lab session. Partial credit for making up this work may be given at the discretion of your instructor.

Policy on make-up exams: If your instructor agrees that you missed a lab exam for a legitimate reason (generally associated with notification by office of the Dean of Student Affairs), a make-up exam will be prepared.

Policy on missed quizzes: Quizzes are given at the start of the lab session. A student who arrives late will not be given an opportunity to take the quiz and, therefore, will receive a grade of zero.

Policy on late assignments: You are expected to turn in assignments at the start of lab on the due date, and an assignment is considered at least one day late if it is not turned in at this time. For each calendar day that an assignment is late (including weekends), 10% of the total value of the assignment (*e.g.*, 2.5 points for a 25-point assignment) will be deducted from your final grade for the assignment.

Cedar Crest College Honor Code (including the Classroom Protocol): The Department of Biological Sciences fully supports the Community Standards for Academic Conduct (Section I of the Honor Code), which can be found in "A Student's Guide to Cedar Crest College" on pages 5-8.

Policy regarding disabilities: Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.

Keeping a Laboratory Notebook

As a scientist, you will learn that different labs have different requirements for lab notebook entries. In general, the notebook is a chronological record of your lab activities.

The design of the notebook required for this course is such that you can only write on one side of each page in your notebook; a duplicate copy of each page is produced as you make entries. This allows you to keep your notebook while your instructor evaluates your work. Your instructor will let you know when the duplicate pages should be submitted.

You should set aside two pages at the beginning of the notebook for a Table of Contents. While the notebook entries for each lab exercise will be graded separately, an overall grade will also be assigned; leaving out the Table of Contents will lower the overall grade.

In BIO 121, your lab notebook is where you directly record your lab activities. It is bad practice to record activities in elsewhere and later enter the information into the notebook; transcription errors can occur. The following information should always be included as you record your activities in your notebook. Your instructor may require additional information.

- The date of the activity.
- The names of individuals with whom you are directly working.
- A list of objectives (which may include testing a specific hypothesis).
- A chronological record of your activities. This is the major part of your notebook entry. It will include:
 - specific steps in your laboratory procedure(s);
 - calculations (*e.g.*, for making solutions);
 - data recorded as they are collected.
- A concise summary.