Cedar Crest College
Biology 121, Principles of Biology Lab, Fall 2009

General Course Information

Day and Time		Section	Instructor
Monday	1-4 PM	06	Dr. Kent Fitzgerald
Tuesday	8-11 AM	01	Dr. Joy Karnas
Tuesday	1-4 PM	02	Dr. Andre Walther
Tuesday	4-7 PM	70	Dr. Kent Fitzgerald
Wednesday	1-4 PM	03	Dr. Alan Hale
Wednesday	4-7 PM	71	Dr. Alan Hale
Thursday	8-11 AM	04	Dr. Brian Misanko
Thursday	1-4 PM	05	Dr. Amy Reese

Number of Credits: 1

Required Materials:

- Carbonless duplicate lab notebook designated for BIO 121 (available at the College bookstore). Do not use a different notebook.
- Lab coat (available at the College bookstore).
- 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	Mon	Tue	Wed	Thu	Lab, Assignments, Quizzes, and Exams	Points	
1	Aug 24	Aug 25	Aug 26	Aug 27	Lab 1.1: Microscopy and Measurement Lab introduction, policies, and safety		
2	Aug 31	Sep 1	Sep 2	Sep 3	Lab 1.2: Microscopy: Cells and Organisms Quiz 1 → Notebook pages for Lab 1 → Assignment 1.1 due →	 25 30 15	
Week of Labor Day, Sep 7-10: No Labs							
3	Sep 14	Sep 15	Sep 16	Sep 17	Lab 2.1: Diffusion and Osmosis Quiz 2 → Assignment 1.2 due →	 25 15	
4	Sep 21	Sep 22	Sep 23	Sep 24	Lab 2.2: Diffusion and Membrane Potentials Quiz 3 → Notebook pages for Lab 2 due →	 25 30	
5	Sep 28	Sep 29	Sep 30	Oct 1	Lab 3.1: Photosynthesis: Chloroplasts Quiz 4 → Assignment 2 due →	 25 30	
6	Oct 5	Oct 6	Oct 7	Oct 8	Lab 3.2: Photosynthesis: Photopigments Lab midterm exam → Notebook pages for Lab 3 due →	 125 30	
Fall Break, Oct 12-13: no Mon and Tue labs. Lab cycle begins Wed until Thanksgiving.							
7	Oct 19	Oct 20	Oct 14	Oct 15	Lab 4.1: Respiration: Experimental Design Workshop Assignment 3 due →	 30	
8	Oct 26	Oct 27	Oct 21	Oct 22	Lab 4.2: Respiration: Experimental Procedure Quiz 5 → Notebook pages for Lab 4 due →	 25 30	
9	Nov 2	Nov 3	Oct 28	Oct 29	5.1: Meiosis and Mendelian Genetics: Flies Quiz 6 → Assignment 4 due →	 25 50	
10	Nov 9	Nov 10	Nov 4	Nov 5	5.2: Meiosis and Mendelian Genetics: Corn Quiz 7 → Notebook pages for Lab 5, except fly exp →	 25 30	
11	Nov 16	Nov 17	Nov 11	Nov 12	6.1: Molecular Genetics: DNA and PCR Quiz 8 → Assignment 5 due →	 25 30	
12	Nov 23	Nov 24	Nov 18	Nov 19	6.2: Molecular Genetics: Gels and GMO debate Quiz 9 → Notebook pages for Lab 6 → Assignment 6 due →	 25 50 30	
Thanksgiving Break, Nov 25, 26: no Wed and Thu labs. Lab cycle begins Mon for the final week.							
13	Nov 30	Dec 1	Dec 2	Dec 3	Lab Final exam → Notebook pages for Lab 5, fly exp → Notebook Table of Contents → Assignment 7 due →	150 30 20 50	

Grading

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

Point Distribution:

The due dates and point values for graded work are shown in the Lab Schedule above. You can use the last column to track your points earned.

- Quizzes (9): 25 points each, 225 points total.
- Lab notebook: 250 points toal. Unless otherwise stated by your instructor, duplicate copies of your notebook entries will be collected at the end of each lab.
- Lab assignments (7): 15-50 points each, 250 points total.
- Lab exams (midterm and final), 275 points total.

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

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

Student Responsibilities

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

- If you must miss lab because of a College-sponsored 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.