Biology 122 - Principles of Biology II
Spring 2010 - Lab Syllabus

Professor	Office	Email	Extension
Dr. Alan Hale	SC 134	abhale@cedarcrest.edu	3510
Dr. Richard Kliman	MB 24	rmkliman@cedarcrest.edu	3501
Prof. Judy Malitsch	MB 23	jamalits@cedarcrest.edu	3605
Dr. Andre Walther	MB 25	awalther@cedarcrest.edu	3513

Instructional Assistant: Victoria Richards. IA sessions will be held in SC 118 at the following times: Tuesday 11 AM -1 PM, Thursday 11 AM - 1 PM, and Friday Noon - 1 PM.

GENERAL COURSE INFORMATION

Course: Biology 122, Principles of Biology Lab; Spring 2010
Number of credits: 1
Required materials: A laboratory notebook from bookstore (ISBN 0-7167-3900-3) designated for BIO 122; do not use a different notebook.
Course description (from catalog): An introduction to evolutionary theory and principles, this course emphasizes plant diversity, structure and function, animal diversity, vertebrate animal structure and function, human structure and function, and an overview of ecology and animal behavior. The laboratory includes student/faculty research and emphasizes skills and techniques. Three hours lecture, three hours laboratory.
Format of course: Lab (3 hours). The 3-credit lecture is a separate course, and should be taken concurrently with lab.
Broad Course objectives: The purpose of this course (along with BIO 121) is to provide you with an overview of the fundamental concepts of modern biology. In BIO 122, we will focus on evolution, ecology, biodiversity, physiology, and behavior.

SPECIFIC 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. You will become familiar with drawing and labeling scientific material. Notebook entries will be graded regularly by your professor. Likewise, your ability to interpret data also will be assessed by assignments.

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 most lab exercises, you will take a quiz on your advance preparation. Quizzes will also reinforce material covered in previous labs.

3. At the completion of the course, you will know how to design an experiment to test a specific hypothesis. This will be done in Exercises 1, 5, 8, and 9. It may also be done as part of your research project. In Exercises 5, 8, and 9, you will use formal statistical tests.

4. During the course, concepts in BIO 122 lecture will be reinforced in lab. Lab will provide a venue for active learning. This will be assessed through laboratory assignments and with a Lab Final Exam.

GRADING

Final Course Grade: The final course grade is based on percentage of points earned:

≥ 93% = A	≥ 90% = A-	≥ 87% = B+	≥ 83% = B	≥ 80% = B-
≥ 77% = C+	≥ 73% = C	≥ 70% = C-	≥ 67% = D+	≥ 60% = D

Point Distribution:

Assignment	Points per assignment	Total
Quizzes (7, with one being dropped)	25	150
Weekly Notebook Entries (9)	25	225
Written Assignments (4)	25	100
Research Notebook Entries* (collected during Weeks 6 and 13)	40	80
Informal Research Presentation	40	40
Formal Research Presentation	75	75
Abstract	50	50
Independent Research Participation*	30	30
Lab Final Exam	125	125
	TOTAL	**875**

* See additional notes at the end of the syllabus

LAB SCHEDULE

Week	Dates	Description
1	Jan 19-21	Introduction; Exercise 1: Hypotheses and Hypothesis Testing
2	Jan 26-28	Quiz 1; Freshman Research Introductions; Exercise 2: Hardy-Weinberg
3	Feb 2-4	Quiz 2; Exercise 3: Phylogeny Reconstruction**; RESEARCH[1]
4	Feb 9-11	RESEARCH
5	Feb 16-18	Information on Informal Research Presentations; RESEARCH
6	Feb 23-25	Quiz 3; Reading a Scientific Paper; Exercise 4: Plant Life Cycles
7	Mar 2-4	Quiz 4; Informal Research Presentations; Exercise 5: Nervous System**
Spring Break		
8	Mar 16-18	RESEARCH
9	Mar 23-25	Quiz 5; Exercise 6: Diversity of Fungi
10	Mar 30-Apr 1	Quiz 6; Exercise 7: Animal Diversity and Development
11	Apr 6-8	RESEARCH[2]
12	Apr 13-15	Quiz 7; Exercise 8: Cardiovascular Physiology*
13	Apr 20-22	Formal Research Presentations; Exercise 9: Ecology (Part I)
14	Apr 27-29	Exercise 9: Ecology (Part II)**; Lab Final Exam

* Assignment associated with exercise.

** Assignment will be completed during the lab session.

[1] Research teams will discuss the specific aims of their projects during this session

[2] April 6 follows a Monday schedule; therefore, Tuesday lab sections should schedule 3 hours of research at a time that works for members of the research team.

LAB EXERCISE AND ASSOCIATED ASSIGNMENTS

You may choose to use the right hand column to help keep track of your grades in the course.

Graded Activity (Points)	Points Earned
Quizzes* and Final Exam	
Quiz 1 (25) – Week 2	
Quiz 2 (25) – Week 3	
Quiz 3 (25) – Week 6	
Quiz 4 (25) – Week 7	
Quiz 5 (25) – Week 9	
Quiz 6 (25) – Week 10	
Quiz 7 (25) – Week 12	
Final Exam (125) – Week 14	
Notebook Entries (collected at the end of the lab session or when otherwise specified by the instructor)	
Exercise 1 (25)	
Exercise 2 (25)	
Exercise 3 (25)	
Exercise 4 (25)	
Exercise 5 (25)	
Exercise 6 (25)	
Exercise 7 (25)	
Exercise 8 (25)	
Exercise 9 (25)	
Lab Assignments	
Exercise 3 (25) – Due in lab, Week 3	
Exercise 7 (25) – Due in lab, Week 11	
Exercise 8 (25) – Due at the start of lab, Week 13	
Exercise 9 (25) – Due in lab, Week 14	
Research	
Notebook Entries (40) – First set collected Week 6	
Notebook Entries (40) – Second set collected Week 13	
Informal Research Presentation (40)	
Formal Research Presentation (75)	
Abstract (50)	
Independent Research Participation (30)	

* Reminder: the low quiz grade is dropped from the final grade calculation.

STUDENT RESPONSIBILITIES

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

- If you must miss class for a Cedar Crest-sanctioned activity, provide appropriate proof in advance; this should be done as soon as you are aware of the conflict. Otherwise, your absence will be considered unexcused.
- If you must miss class for a legitimate, but unforeseen, reason, let us know as soon as possible; **your absence will be considered unexcused until we receive notification from the Dean of Student Affairs that the absence was judged to be unavoidable due to serious illness/medical emergency or family emergency. Professors may choose to excuse you for**

other reasons; your instructor will make her/his policy clear at the start of the semester. *Please note that the Dean of Student Affairs only certifies that your absence was unavoidable; no explicit reason is given, and the instructor reserves the right to confirm that the absence was due to either illness or family emergency (without requesting specific information). This notification policy exists to maintain student confidentiality. You should understand, however, that it is solely up to the professor to excuse an absence.*

- If your absence is unexcused, 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 professor.

Policy on Missed Quizzes: Quizzes are given at the start of 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. There will be seven quizzes, and the low quiz grade will be dropped. Be aware that a missed quiz due to a single excused absence will be assigned a grade of zero and counted as the low quiz grade.

Policy on Late Assignments: Unless noted otherwise, you are expected to turn in assignments at the beginning 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 day that an assignment is late (including weekends and breaks), 10% of the total point value of the assignment will be deducted from your final grade for the assignment.

Cedar Crest College Honor Code: The Department of Biological Sciences fully supports the Cedar Crest College Honor Code. The Honor Code is explained in the *Student Handbook*; we recommend that you review it.

Policy regarding Learning 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 (x3484).

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 your entries. This allows you to keep your notebook while your instructor evaluates your work. Your instructor will let you know when duplicate pages should be turned in.

In BIO 122, your lab notebook is where you directly record your lab activities. It is bad practice to record activities in one place and later enter the information into the notebook; transcription errors can occur.

You should set aside two pages at the beginning of the notebook for a Table of Contents.

The following information should always be included as you record your activities in your notebook. Your instructor may require additional information.

- The date and time of the activity. Weather and location data should be included for entries made in the field.
- The names of individuals with whom you are directly working.
- A list of objectives (which may include testing a specific hypothesis). These should not be copied

from the lab handout; rather, they should reflect the scientific objectives of that day's activities.

- 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. This may include drawings that are to be made and labeled.
- A concise summary. Some of your lab handouts will indicate specifically what should go into this section; your lab handout will often include specific assigned questions or diagrams to help you summarize what you learned in that week's lab.

You will set aside space in your notebook for your research project. Content and format of your "research notebook" should not differ substantively from the rest of your notebook. You are still responsible for writing the time and date, objectives, the names of other students with whom you worked on that particular day, specific laboratory procedures for that day, and a concise summary. Even if you met for 15 minutes to check the results of a gel or to work on your abstract/formal presentation, that meeting should be recorded in your research notebook.

INDEPENDENT RESEARCH PARTICIPATION

The RDs (Research Directors) for your independent research project will grade you on a scale of 0 to 30 points on your research participation. This includes (i) attending the independent research meetings, (ii) conducting the research with your team in a helpful and engaged manner, (iii) working with your research team and RD to put together your informal and formal presentations, and (iv) working with your research team and RD to write the abstract. Your research team may meet beyond the scheduled class time to complete some of the research, to practice presentation, and to write the abstract. Every effort should be made to include as many members of the research team as possible in these outside activities. If your schedule shifts, it is your responsibility to inform your RD if you cannot make the outside meetings and to arrange additional times to conduct research or to practice talks, to ensure that you are contributing equally to the efforts of the research team.