

# BIOL 1150 - General Biology II Laboratory

## "The Diversity of Life"

### I. General Information

CSU Stanislaus, Spring 2010

**Professor:** Dr. Matthew R. Cover

**Office Hours:** Weds 1:30-2:30, Thurs 3-5, or by appointment

**Office:** N-256

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**Office Phone:** (209) 664-6694

**Website:** <http://science.csustan.edu/cover/>

**Course Website:** Blackboard (<http://bb.csustan.edu>)

**Class Time/Place:** Thursday 11:15-2:22 in N-211 (Section 1150-002)

### II. Course Description

Introduction to the fundamental aspects of organismal biology: taxonomy, diversity, form and function. Prerequisite: BIOL 1050.

BIOL 1150 is the second semester of the new two-semester general biology sequence at CSU Stanislaus. The lecture and laboratory portions of the course must be taken at the same time. This course is designed specifically for biology majors, as well as other students who want a comprehensive introduction to biology. BIOL 1150 is not a G.E. course. Because it is a prerequisite to the Biology major, and nearly all upper-division biology courses, it is a content-heavy course that requires a substantial time commitment.

The General Biology II laboratory is designed to provide students with laboratory and field experience with a focus on the **diversity of life**. We will explore many of the topics that are covered in lecture, but in lab we have the luxury of looking closely at examples of all of the major groups of living organisms on earth. A major goal of this course is for you to develop an appreciation of this diversity, and give you the tools to recognize, classify, and describe virtually all of the world's life.

*"The beginning of wisdom is calling things by their right names."*

Chinese Proverb

### III. Student Learning Objectives

After completing this course, you should be able to:

1. Identify by sight the major groups of life on earth, and know the organism's scientific name and common name.
2. Describe the basic biology of the major groups of life on earth, including their internal and external features, physiology, and ecology.
3. Use both compound and dissection microscopes to examine cells, tissues, and organisms.
4. Create cladograms based on morphological characters of specimens.
5. Propose studies and experiments to answer biological questions using the scientific method.
6. Work effectively with other students to perform laboratory tasks.

#### IV. Grading

Grades will be based on laboratory assignments, weekly quizzes, two practical exams, a biodiversity survey assignment, and a field trip. Points earned in lab will be combined with points from lecture to determine your grade for the class.

Weekly Quizzes (5 pts each x 11)	50 pts. (lowest quiz is dropped)
Lab Assignments (5 pts each x 13)	65 pts.
Midterm Lab Exam	20 pts.
Final Lab Exam	30 pts.
Campus Biosurvey	30 pts.
Monterey Field Trip	20 pts.
<b>TOTAL</b>	<b>215 pts.</b>

#### Lab Assignments

Weekly lab assignment will generally be in the form of questions you need to answer based on the topics covered in lab. These questions will often require thinking critically about the topic and making educated guesses. The answers will not always be obvious, and there **may not be a “right answer.”** Try to resist immediately turning to your textbook or another source for an answer to these questions. If you are still stuck after thinking about the question for a while, you may utilize other sources to help answer these questions. However, if you use a source other than your textbook, you should include a citation to the reference. You are welcome to discuss these questions with your lab mates, but your written answer should be **self-composed**. In other words, your answer should not be identical to your lab mates.

Your responses will be judged and graded based on **completeness, correct grammar, originality, and level of critical thinking**. An original, creative answer will always get a better grade than an idea taken from another source. Questions that require written responses should be in **complete sentences**. I may not grade every question of each lab assignment; instead, I may select one or two questions to evaluate in detail, and assign an overall grade for the assignment based on your responses to these questions. Thus, it is important that you put effort into answering each question to the best of your ability. As a guideline, I expect that you will spend 1-2 hours answering the questions in the lab assignments, depending upon the number and type of questions. If you have time, it is best to start answering these questions while you are still in lab. But most weeks you will probably have to spend some time on them at home. Lab assignments are due in the lab following the lab they were assigned.

#### Lab Exams

Lab exams will include examples of the various organisms we examine in lab. You will be asked to identify organisms and give their scientific and/or common names. You will also be asked questions about the organisms' ecology, morphology, and physiology.

#### Campus Biosurvey

The campus biosurvey is a project to identify plants and animals that occur on the CSU Stanislaus campus. You will be required to find, identify, and take photographs of a wide diversity of organisms. You will submit your photos, along with information on where and when you observed the organism, for credit.

#### Monterey Bay Aquarium Field Trip

An all-day field trip to the Monterey Bay Aquarium is a required part of the class. We will meet at the CSU Stanislaus campus, by the reflecting pond in front of the library, at 8 am on Saturday, May 8. Buses will take us to the aquarium. We will return by 5:30 pm. There is no cost.

## V. Required Course Materials

**1. BIOL 1150 Lab Manual.** Available from the campus bookstore (by week 3 of classes) as a course pack (recommended). Or, can be downloaded and printed out (prior to lab!) from the course website. Note: Printed copies of the lab assignment will not be available in lab after week 2.

**2. Dissection Kit.** Available at the bookstore (by week 3 of classes). You will need this by April 22<sup>nd</sup>.

**3. Campbell's Biology.** The text book for the lecture portion of class will be valuable for lab as well.

## VI. Laboratory Policies

This course requires your presence in lab every week, and for the **entire lab period**. Because the laboratory setups change from class to class, it is **not possible to make-up missed laboratories**. Unexcused absences will result in no points for lab write-ups and quizzes given that day. You can drop your lowest quiz, but there is no way to make up for missed labs. Quizzes will begin promptly at the beginning of lab. If you are late you will have less time to complete your quiz. If you arrive after a quiz has been collected you will not be able to take that quiz.

At the beginning of each class, you will turn in your write-up from the previous week's lab. For most of the laboratories, you will work in groups of two or four students. However, you should turn in your own write-up for each laboratory, which needs to be **your own work**. Do not simply write the same answers as your lab partner. Instead, synthesize results and put your answers in your own words. Write-ups will be graded based on completeness, accuracy, and legibility.

I have a no-tolerance policy for cheating. Students cheating on quizzes or exams, representing the work of others as their own, or turning in lab assignments for labs not attended will receive a zero for that assignment and may receive an F in the class.

You need to make productive use of lab time in order to make sure you finish all of the assignments and examine all of the specimens. **You should expect to spend the entire 3 hour class period working on lab each week**. If you finish your lab assignment early, you should take advantage of the extra time to study the specimens. Identifying specimens requires developing keen observation skills, and an ability to recognize similarities amidst differences. These skills are only developed through practice.

## Laboratory Schedule

18-Feb	<ol style="list-style-type: none"><li>1. Introduction and Syllabus</li><li>2. History and diversity of life- timeline</li><li>3. Biological classification</li><li>4. Prokaryotes, Part I: Collect bacteria</li></ol>
25-Feb	<ol style="list-style-type: none"><li>1. Prokaryotes, Part II: Examine bacteria</li><li>2. Introduction to Eukaryotes</li><li>3. Protista, Part I: Major groups of protists, collect pond water</li></ol>
4-Mar	<ol style="list-style-type: none"><li>1. Protista, Part II: Examine pond water samples, identify protists</li><li>2. Fungi</li><li>3. Plant cells</li></ol>
11-Mar	<ol style="list-style-type: none"><li>1. Bryophytes (mosses and allies)</li><li>2. Pteridophytes (ferns and allies)</li><li>3. Alternation of generations</li></ol>
18-Mar	<ol style="list-style-type: none"><li>1. Gymnosperms: seeds, secondary growth</li><li>2. Angiosperms, Part I: Roots, stems</li></ol>
25-Mar	<ol style="list-style-type: none"><li>1. Angiosperms, Part II: Leaves, flowers, fruit</li></ol>
1-Apr	<ol style="list-style-type: none"><li>1. Midterm</li><li>2. Introduction to animals</li><li>3. Cladogram of Eumetazoa</li></ol>
15-Apr	<ol style="list-style-type: none"><li>1. Animal cells and tissues</li><li>2. Parazoa: Porifera</li><li>3. Radiata: Cnidaria</li></ol>
22-Apr	<ol style="list-style-type: none"><li>1. Platyzoa: Platyhelminthes</li><li>2. Lophotrochozoa: Mollusca (clam dissection), Annelida,</li></ol>
29-Apr	<ol style="list-style-type: none"><li>1. Ecdysozoa: Nematoda, Arthropoda (crayfish dissection)</li><li>2. Deuterostomes: Echinodermata (seastar dissection demo)</li></ol>
6-May	<ol style="list-style-type: none"><li>1. Chordata</li><li>2. Cladogram of Vertebrates</li></ol>
Sat. 8-May	Field Trip: Monterey Bay Aquarium, 8 am – 5:30 pm
13-May	<ol style="list-style-type: none"><li>1. Vertebrate anatomy (frog dissection)</li><li>2. Animal adaptations: mammal skulls and skeletons</li></ol>
20-May	<ol style="list-style-type: none"><li>1. Ecosystems</li><li>2. Landscape ecology</li></ol>
27-May	Final Exam