



**BIOL 1150-002 Lab**  
**General Biology II Laboratory**  
**“The Diversity of Life”**  
**CSU Stanislaus, Fall 2012**

**I. General Information**

**Time:** Wed 2:00-4:50 am

**Location:** N206

**Instructor:** Bryan Shragge, Teaching assistant

**Office Hours:** TBD

Email is the best way to reach me. I respond to email within 24-48 hours. Important: Please write “BIOL1150” in the subject line, and include your full name and student ID in the email.

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

**II. Course Description**

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

BIOL 1150 is the second semester of the two-semester general biology sequence at CSU Stanislaus. The lecture and laboratory portions of the course must be taken at the same time- it is not possible to just take the lab or lecture, even if you have passed one or the other a previous semester. This course is designed specifically for biology majors, as well as other students who want a comprehensive introduction to biology. Biology majors and other students taking the two-course sequence (1050 and 1150) must get a C or better in 1050 in order to take 1150.

BIOL 1150 also serves as a G.E. course. For non-science majors, it is possible to take BIOL 1150 without first passing BIOL 1050. Because it is a prerequisite to the Biology major, however, BIOL 1150 is a content-heavy course that requires a substantial time commitment. For a GE course designed specifically for non-science

majors, we recommend BIOL1010/1020.

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

*"Mankind has gone very far into an artificial world of his own creation. He has sought to insulate himself, in his cities of steel and concrete, from the realities of earth and water and the growing seed. Intoxicated with a sense of his own power, he seems to be going farther and farther into more experiments for the destruction of himself and his world. There is certainly no single remedy for this condition and I am offering no panacea. But it seems reasonable to believe — and I do believe — that the more clearly we can focus our attention on the wonders and realities of the universe about us the less taste we shall have for the destruction of our race. Wonder and humility are wholesome emotions, and they do not exist side by side with a lust for destruction.*

-Rachel Carson, speech accepting the John Burroughs Medal

(April 1952)

### **III. Student Learning Objectives**

After completing this course, you should be able to:

- Recognize, identify, and classify the major groups of life on earth (i.e., recalling the scientific names of taxonomic groups at the Kingdom, Phylum, and/or Class level).
- Describe the basic biology (internal and external features, ecology, and evolutionary history) of the major groups of life on earth.
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- Describe how technological advances, including microscopes and genetic sequencing, have expanded our understanding of the diversity of life on earth.
- Proficiently use compound and dissection microscopes to examine cells, tissues, and organisms.
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- Create cladograms that describe hypothetical evolutionary relationships based on morphological characters of specimens.
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- Cooperate with other students to investigate and learn about the diversity of life.

### **IV. Grading**

Grades will be based on three practical exams, a biodiversity survey assignment, a

field trip, and attendance/presentations/quizzes. Your lab grade is worth ~1/3 of your total grade for the course, while the lecture grade is worth ~2/3 of the total. Note: Points from lab may not be 1:1 equivalent to points for the lecture portion of the course; nevertheless, your lab grade will still be worth ~1/3 of the total.

Attendance/Participation/Quizzes and exams)	100 pts. (10 points per lab, except Lab 1)
Campus Biosurvey	70 pts.
Monterey Bay Aquarium Assignment	30 pts.
Lab Exam 1	20 pts.
Lab Exam 2	30 pts.
Lab exam 3	50 pts.
<b>TOTAL</b>	<b>300 pts.</b>

### In-Class Quizzes, Presentations, and Activities

There will be 10 points per lab session covering quizzes, presentations, participation, and attendance. Typically, I will give a short “warm-up” quiz at the beginning of class covering the general concepts we will be working on that day in lab. Questions will come from material in the lab workbook, **which you need to read ahead of time to be prepared for class**. Most of our class time will be spent applying the material that is in the lab manual, rather than going over the basic concepts (which you should read and study ahead of time). Pay particular attention to the “objectives” listed at the beginning of each exercise. These quizzes will be given right at the beginning of class. There are no makeup quizzes; **latecomers will receive a zero on the quiz**.

At various times during lab I will randomly choose one or more groups to present their answers to questions from the day’s lab assignment. In order to get credit for your presentation, you and your group members need to give a thorough explanation that answers the question. A simple, off-the-top-of-your-head answer will not get full credit. Often, the questions will come from questions at the end of each lab exercise. Lab questions 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.” If you are still stuck after thinking about the question for a while, you SHOULD read up on the topic in Campbell. Your answers will be judged and graded based on completeness, originality, and level of critical thinking.

We will also often have a quiz at the end of class. You must be present at the time of the quiz in order to take it; there are no make-ups. Students who leave lab early and then return at the end of the class will not be allowed to take the quiz. To do well on this quiz, make sure you are staying on task, completing all of the activities, and closely examining the specimens.

### Lab Exams

Lab exams will cover “the diversity of life,” including examples of the various organisms we examine in lab. There will be two types of questions: (1) questions that ask you to identify organisms and give their scientific and/or common names, and (2) short-answer questions about the organisms’ ecology, morphology, and evolutionary history. The exams are not cumulative; each exam covers the new topics we have studied since the previous exam.

### Campus Biosurvey

The campus biosurvey is a project to identify 35 different forms of life 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. The Biosurvey will be due in class during Lab 10. See the handout for more information.

### Monterey Bay Aquarium Field Trip

An all-day field trip to the Monterey Bay Aquarium is a **required** part of the class. The field trip this semester is scheduled for the **Veterans Day Holiday: Monday, November 12** (this is an official school holiday, so there are no classes on this day). We will meet on the CSU Stanislaus campus, by the end of the reflecting pond in front of the library (the main entrance loop) at **7:45 am**. Buses will take us to the aquarium. We will return no later than 6:00 pm. There is no cost: we provide free bus transportation and admission to the aquarium. You should bring a clipboard or other hard surface for writing, the MBA handout that we give you ahead of time, pencils (not pens!), comfortable walking shoes, a jacket, and a lunch or lunch money. Be prepared for being on your feet all day and for a range of weather conditions. Note: if you are not able to attend the field trip on the scheduled day, you will need to arrange to attend the aquarium and pay for own ticket (\$35) in order to complete the assignment.

## **V. Required Course Materials**

- **BIOL 1150 Lab Manual and Worksheets.** Available from the campus bookstore as a course pack by the first full week of classes. This will come as a bundle of loose-leaf, 3-hole punched pages, which you can store it in a 3-ring binder. Bring it with you to each lab- you will need it to follow along with the lab exercises and answer study questions. It is also handy for making notes and drawings during lab. Because the lab instructors wrote this manual from scratch, it is relatively inexpensive (~\$10).
- **Photographic Atlas for Biology Lab.** By Van De Graaff and Crawley, 6<sup>th</sup> Edition, Morton Publishing Company, ISBN 9780895828033. Available from the campus bookstore (~\$30-\$40 new). This book is extremely helpful when we are looking at specimens and performing dissections in class. Virtually every specimen and slide we examine in class is shown and labeled in this photo atlas. It will be your best guide as we examine the diversity of life. You can buy it new or used in the campus bookstore, or online, in bound, soft-

cover format, or as loose-leaf, 3-hole punched pages. We recommend the loose pages so they can lay flat in your binder while you do dissections or examine specimens.

- **Dissection Kit.** Available at the bookstore or at Nasco Lab Supply (4825 Stoddard Rd., Modesto). It should have a scalpel, forceps, a blunt probe, and micro-dissection scissors. A good kit should cost \$10-15.
- **Campbell's Biology.** Your lecture text book will be very helpful as you work on lab assignments and questions. It is recommended, although not required, that you bring it to lab.

## VI. Laboratory Policies

This course requires your presence in lab every week 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 quizzes and group presentations given that day. If you know you will miss a lab ahead of time, tell your lab instructor at least one week in advance- we may be able to arrange for you to attend a different lab section. 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.

I have a no-tolerance policy for cheating and plagiarism. Students cheating on quizzes or exams or representing the work of others as their own will receive a zero for that assignment and will receive an F in the class. Even a quick glance at your neighbor's paper during a quiz is considered cheating, and subject to disciplinary action. As a student at this University, you should take great satisfaction and pride in knowing that the work you submit is completely your own.

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 2 hour and 50 minute class period working on lab each week.** Leaving lab early, even if you come back at the end of class, will mean that you will get zero points for any presentations or quizzes for that day. If you finish your lab assignment early, you should take advantage of the extra time to study any specimens that are available. Identifying specimens requires developing keen observation skills, and an ability to recognize similarities amidst differences. These skills are only developed through practice. Finally, **Cell phones**—if you feel the need to text, talk, tweet, download, 4 square or whatever—take it out into the hallway. Save yourself the embarrassment of me coming over to you to make the point.

## BIOL 1150 Laboratory Schedule for Fall 2012

(Numbered items refer to exercises in the lab manual)

Lab 1	Aug. 28, 29, 30 (First full week of classes)	Introduction, Syllabus 1. History of life 2. Biological classification and the web of life
Lab 2	Sept. 4, 5, 6 (Monday is Labor Day)	3. Prokaryotes: Microbes in the Environment, Part I 4. Microscope review 5. Bacteria Cells
Lab 3	Sept. 11, 12, 13	6. Microbes in our environment, Part II 7. Eukaryotes: Protists
-	Sept. 18, 19, 20	<b>Exam #1 (Exercises 1-7)</b>
Lab 4	Sept. 25, 26, 27	8. Fungi and Lichen 9. Cladograms 10. Introduction to Plants
Lab 5	Oct. 2, 3, 4	Plant Life Cycles: Alternation of Generations 11. Bryophytes (mosses and allies) 12. Pteridophytes (ferns and allies) 13. Gymnosperms (conifers and allies)
Lab 6	Oct. 9, 10, 11 (Weds. official campus holiday!)	14. Angiosperms (flowering plants) 15. Supermarket Botany
-	Oct. 16, 17, 18	<b>Exam #2 (Protists, Fungi, Plants; Exercises 8-15)</b>
Lab 7	Oct. 23, 24, 25	16. Animal Cells and Tissues 17. Parazoa: Porifera 18. Radiata: Cnidaria
Lab 8	Oct. 30, 31, Nov. 1	19. Platyzoa: Platyhelminthes 20. Lophotrochozoa: Annelida 21. Lophotrochozoa: Mollusca (clam dissection)

Lab 9	Nov. 6, 7, 8	22. Ecdysozoa: Nematoda 23. Ecdysozoa: Arthropoda (crayfish dissection) 24. Deuterostomes: Echinodermata (sea star dissection)
-	Monday, Nov. 12 Veterans Day	Monterey Bay Aquarium Field Trip, 7:45 am – 6:00 pm Meet at the end of the reflecting pond in front of the library.
Lab 10	Nov. 13, 14, 15	25. Deuterostomes: Chordata 26. Vertebrate anatomy (frog dissection)
-	Nov. 20, 21, 22	No Labs, Thanksgiving Week
Lab 11	Nov. 27, 28, 29	27. Animal adaptations: mammal skulls and skeletons 28. Ecosystems and Landscape Ecology
	Dec. 4, 5, 6	<b>Exam #3 (Animals, Exercises 16-28)</b>