



BIOL 1150 Lab
General Biology II Laboratory
“The Diversity of Life”
CSU Stanislaus, Fall 2018



I. General Information

Section: 1150-002

Date/Time: Tuesday, 8 a.m. until 10:50 a.m.

Location: N206

Instructor: Dr. Laurissa Hamilton, Department of Biological Sciences

Office: N-257 **Office Hours:** Monday 1 – 3pm, & by appointment

Contact Information: my office or after class (*best*) or lhamilton@csustan.edu (*good*) or (209) 667-3489 (*worst*)

Important for email: Please write “BIOL 1150 **Lab**” in the subject line, and include your full name in the email.

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

II. Course Description

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

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 take the lab or lecture separately, 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 need a comprehensive introduction to biology. All students enrolled in BIOL 1150 must have received a C- or better in 1050; students without a C- or better grade will be dropped from the class. To receive credit for the one-year biology sequence, you must take *both* Biology 1050 and Biology 1150 at CSU Stanislaus, or transfer the complete, equivalent one-year *majors* series from another institution.

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 carrying out laboratory and field exercises that give you practice being a scientist. A major goal of this course is for you to develop an appreciation of the diversity of life, how this diversity came about (evolution), and how biota interact with their environment (ecology). Additionally, this lab will give you the tools to recognize, classify, and describe virtually all of the world’s life, and to carry out independent investigations of organismal biology.

“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. Recognize, identify, and classify the major groups of life on earth, and understand how they are related to one another on the tree of life (phylogeny).

2. Describe the basic biology (life cycles, internal and external features, ecology, and evolutionary history) of the major groups of life on earth.
3. Describe how technological advances, including microscopes and genetic sequencing, have expanded our understanding of the diversity of life on earth.
4. Proficiently use compound and dissection microscopes to examine cells, tissues, and organisms.
5. Create and interpret cladograms that describe evolutionary relationships based on morphological or genetic characters of specimens.
6. Analyze and interpret biological data collected in the field and laboratory using statistics and graphs.
7. Cooperate with other students to investigate and learn about the diversity of life, ecology, and evolution.

IV. Grades

Grades will be based on quizzes, exams, in-class activities, a research project, a biodiversity survey assignment, and a Monterey Bay Aquarium assignment. Your lab grade is worth 25% of your total grade for the course. 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 25% of the total. Your lab score will be submitted to your lecture instructor, who will combine your lab score to your lecture score and assign you a final grade for the class.

Quizzes/Lab Activities (11x10 pts, drop lowest score)	100 pts.
Ecology research projects	35 pts.
Biosurvey	35 pts.
Monterey Bay Aquarium Assignment	30 pts.
Lab Exam 1	50 pts.
Lab Exam 2	50 pts.
TOTAL	300 pts.

In-Class Quizzes and Participation

Typically, there will be a 5 to 10 point quiz at the start of lab covering material from the previous lab and/or general concepts we will be working on that day in lab. You must be present at the time of the quiz in order to take it; there are no make-ups. Students who show up late will not be allowed to take quizzes. To do well on quizzes, make sure you are staying on task, completing all of the activities, and closely examining the specimens. 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.

At various times during lab, I may randomly choose one or more groups to present their answers to questions from the day’s lab assignment. 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 suffice. 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.” Your answers will be judged on completeness, originality, and level of critical thinking.

Additionally, I may assign homework in the form of questions or analyses. Homework will be due at the beginning of class, and will be a part of your daily 10 points for quizzes/lab activities.

Please be courteous about taking breaks during class. Class usually begins with a quiz and a short introductory lecture, which may last for up to one hour. Please try to avoid leaving the room during this time. Once you are working independently or in groups there will be opportunities to use the restroom, get a drink of water, or stretch your legs.

Lab Exams

Two lab practical exams will cover lab material, 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.

Biosurvey

The biosurvey is a project to observe, identify, and photograph different forms of life. 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. You must submit 10 specimens by the START of lab on **Oct. 2**. The remainder of the Biosurvey (25 specimens) are due by the START of lab on **Nov. 13**, but can be turned in earlier if completed.

Ecology Project

Students, working in pairs, will conduct original ecological research, due the week of Lab 13 (**Nov. 26-30**).

Field Trip to Monterey Bay Aquarium

On **Monday, Nov. 12**, from 7:45 am to 6pm, we will travel by bus—paid for from your lab fees—to the Monterey Bay Aquarium, arguably the finest marine aquarium in the world, where you will complete an assignment (30 pts) on marine biodiversity. The handout will be due upon return to the university.

V. Required Course Materials

- 1. BIOL 1150 Lab Manual.** Available from the campus bookstore. 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 (<\$20).
- 2. Dissection Kit.** Available at the campus 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 costs \$10-15 and can be shared by a pair of students.
- 3. Biology in Focus.** Your lecture textbook will be very helpful as you work on lab assignments and questions. It is recommended that you bring the relevant chapters to lab.
- 4. Recommended but not required: Photographic Atlas for Biology Lab.** By Van De Graaff and Crawley, 6th Edition, Morton Publishing Company, ISBN 9780895828033. (~\$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 via online sources, 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.

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 any other graded activities given that day. If you know you will miss a lab ahead of time, tell your lab instructor at least one week in advance; with instructor permission you *may* be able to attend a different lab section.

Following the return of any graded quiz / assignment, you have *seven days* in which to dispute any grade discrepancies. To dispute the scoring of a quiz / assignment, bring the quiz / assignment and supporting information showing why you deserved a different grade to my office, where we can discuss the issue privately.

Lab assignments are due at the beginning of class. Be on time to earn credit. If you are late, your work is late; 10% of the score (in addition to any deductions for content) will be deducted for each day late – including weekends (this deduction also applies for printing problems; forgot the report at home, etc)!

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 CSU Stanislaus, 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 in lab each week.** If you finish your lab assignment early, you should take advantage of the extra time to study the topics covered that day. Identifying specimens requires developing keen observation skills, and an ability to recognize similarities amidst differences. These skills are only developed through practice. Understanding and remembering the material we cover is a challenge for most students.

***There is a **"no electronics" policy** in the course. All electronics (cell phones, tablets, laptops, etc) must remain in your backpack, purse, etc for the entire class session, unless you are requested to use them for class purposes by the instructor. **Specimens may NOT be photographed.** ***

BIOL 1150 Laboratory Schedule for Fall 2018

Lab #	Week of	Lab Activities, (Exercise # in manual)	Points (quizzes, activities)
1	Aug 27 – 31	(1) Deep Time, Lab Safety, Study Skills, (2) Biological classification	
2	Sep 4 – 7	(9) Cladograms & Evolution handout	10
3	Sep 10 – 14	(3) Microbes I, (4) Microscope review, (5) Bacteria Cells	10
4	Sep 17 – 21	(6) Microbes II, (7) Protists	10
5	Sep 24 – 28	(10) Intro to Plants, (11) Bryophyta, (12) Monilophyta	10
6	Oct 1 – 5	(13) Gymnosperms, (14) Angiosperms, (15) Supermarket Botany	10; First 10 Biosurvey observations-10
7	Oct 8 – 12	(8) Fungi/Lichen, (16) Animal Tissues, (22) Nematoda	10
8	Oct 15 –19	Lab exam 1	50
9	Oct 22 – 26	(17) Porifera, (18) Cnidaria, (19) Platyhelminthes	10
10	Oct 29 – Nov 2	(20) Annelida, (21) Mollusca, (23) Arthropoda	10
11	Nov 5 - 9	(24) Echinodermata, (25) Chordata	10
	Mon., Nov. 12	Monterey Bay Aquarium Field Trip	30 – due on day of trip
12	Nov 13 - 16	(26) Frog dissection, (27) Animal adaptations	10; Biosurvey due – 25
	Nov 19 – 23	THANKSGIVING WEEK—No class, but labs open Mon-Wed so all students can work on ecology projects.	
13	Nov 26 – 30	(28) Ecology, Review for lab practical	10; Ecology Project due – 35
14	Dec 3 – 7	Lab exam 2	50
	Dec 10 – 14	No Lab (Finals start on 12/12)	

Numbers in parentheses, such as (2), refer to chapters in the lab manual.

"To keep every cog and wheel is the first precaution of intelligent tinkering."

Aldo Leopold, A Sand County Almanac