



**BIOL 1150 Lab**  
**General Biology II Laboratory**  
**“The Diversity of Life”**  
**CSU Stanislaus, Fall 2019**



**I. General Information**

**Section:** 1150-005/006  
**Time:** Mon and Wed 2-4:50pm  
**Location:** N206  
**Instructor:** Dr. Michael Fleming, Department of Biological Sciences  
**Office Hours:** Mon 9-10am, Fri 1:30-2:30pm (or by appt.)  
**Email:** mfleming1@csustan.edu  
**Phone:** (209) 664-6923

**II. Course Description**

BIOL 1150 is the second semester of the two-semester general biology sequence at CSU Stanislaus; this course focuses on the fundamental aspects of **organismal biology**: taxonomy, evolution, diversity, form and function, and ecology. 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 practice and opportunity to recognize, classify, and describe virtually all of the world's life forms, 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 cladograms that describe hypothetical 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 biodiversity survey assignment, and a Monterey Bay Aquarium assignment. Your lab grade is worth 25% of your total grade for BIOL 1150. Your lab score will be combined with your lecture score to determine your final grade for the class.

Quizzes/Lab Activities (10x80 pts)	80 pts.
Insect project	25 pts.
Plant Phenology project	30 pts.
Biosurvey	15 pts.
Monterey Bay Aquarium Assignment	20 pts.
Lab Exam 1	40 pts.
Lab Exam 2	40 pts.
<b>TOTAL</b>	<b>250 pts.</b>

#### In-Class Quizzes and Participation

Typically, I will give an 8 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 will randomly choose one or more groups to present their answers to questions from the day’s lab assignment. You and your group members will 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 8 points for quizzes/lab activities.

Please be courteous about taking breaks during class. Class usually begins with a quiz and a short introductory lecture. 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 that ask you to (1) identify organisms and give their scientific and/or common names, and (2) articulate short-answers about the organisms’ ecology, morphology, and evolutionary history. The exams are not cumulative; each covers half of the lab material.

## Biosurvey

The Biosurvey is a project in which you will observe, identify, and photograph different forms of life. Working in pairs, you will be required to find, identify, and take photographs of three organisms. Each pair of students will research a different set of organisms, and you will take turns presenting your findings to the class, for credit, throughout the semester.

## Class Ecology Projects

As a class, students, will conduct original ecological research, on 1) insect biodiversity and 2) plant phenology in response to climate change. More on this later in the class.

## Field Trip to Monterey Bay Aquarium

On Saturday, November 16, from 7:45 a.m. to 6 p.m., we will travel by bus to the Monterey Bay Aquarium, arguably the finest marine aquarium in the world, where you will complete a stimulating assignment on marine biodiversity.

## **V. Required Course Materials**

- 1. The Diversity of Life** notebook, authored by CSU Stanislaus faculty. Available as a pdf. You will download sections of this notebook each week prior to lab and bring it with you to each lab. You need it to follow along with the lab exercises and to answer study questions. You will also need to make notes and drawings during lab. Each student will need her/his own manual.
- 2. Campbell Biology in Focus (2 or 3e).** 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.

## **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.

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 assignments and examine all 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.

## **BIOL 1150 Tentative Laboratory Schedule for Fall 2019**

Lab #	Week of	Lab Activities, (Exercise # in manual)	Points (quizzes, activities)
1	Aug 26 – 30	(1) Deep Time, Study Skills, (2) Biological classification	
2	Sep 2 – 6	<i>No classes on Mon., Sept. 2 (Labor Day);</i> (9) Cladograms & Evolution handout	8

3	Sep 9 – 13	(3) Microbes I, (4) Microscope review, (5) Bacteria Cells <i>NOTE: Monday lab will do Week 2 lab activities this week as well!</i>	8
4	Sep 16 – 20	(6) Microbes II, (7) Protists	8
5	Sep 23 – 27	(10) Intro to Plants, (11) Bryophytes, (12) Ferns & allies, Plant Phenology project Intro	8
6	Sep 30 – Oct 4	(13) Gymnosperms, (14) Angiosperms, (15) Supermarket Botany, Plant Data Check-in	8
7	Oct 7 – 11	Non-instructional day on Tues, Oct 8.	No formal labs. Check with your instructor about open labs.
8	Oct 14 – 18	<b>Lab exam 1</b> , (8) Fungi	40
9	Oct 21 – 25	(16) Animal Tissues, (17) Porifera, (18) Cnidaria, (19) Platyhelminthes	8
10	Oct 28 – Nov 1	(20) Annelida, (21) Mollusca, (22) Nematoda, (23) Arthropoda, Insect Study	8
11	Nov 4 - 8	(24) Echinodermata, (25) Chordata	8; Insect lab report due-25
12	Nov 11 - 15	<i>No classes on Mon., Nov 11 (Veteran's Day)</i> All other sections: (26) Frog dissection, (27) Animal adaptations	8
	(Nov 16, Sat.)	Monterey Bay Aquarium Field Trip	20
13	Nov 18 – 22	(28) Ecology, Plant phenology report Check-in	8
	Nov 25 – 29	THANKSGIVING WEEK—No class except for <i>Monday section</i> <i>(frog dissection/animal adaptations makeup).</i>	No formal labs. Check with your instructor about open labs.
14	Dec 2 – 6	<b>Lab exam 2</b>	40; Plant Phenology Project due – 30
	Dec 9 – 13	No Lab (Finals start on 12/12)	NO LABS

**NOTE:** Pairs of students will present their Biosurvey reports to the lab at different times throughout the semester. Your instructor will schedule your presentation.

*“To keep every cog and wheel is the first precaution of intelligent tinkering.”*

Aldo Leopold, A Sand County Almanac

*“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)