



BIOL 1150 Lab
General Biology II Laboratory
“The Diversity of Life”
CSU Stanislaus, Spring 2014



I. General Information

Section: 1150-002

Time: Wednesday 9:00-11:50 am

Location: N206

Instructor: Dr. Matthew Cover, Associate Professor, Department of Biological Sciences

Office Hours: Wednesday 1:00-4:00, room N273

Email: mcover@csustan.edu

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

Personal Website: <http://www.matthewrcover.com>

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 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 disenrolled. 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 looking closely at examples of all of the major groups of living organisms on earth, as well as 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 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. 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).

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 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.

IV. Grades

Grades will be based on exams, an ecology project, a biodiversity survey assignment, and quizzes/participation. 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 33% of the total.

Quizzes and Participation	130 pts.
Ecology Project	35 pts.
Campus Biosurvey	35 pts.
Lab Exam 1	50 pts.
Lab Exam 2	50 pts.
TOTAL	300 pts.

In-Class Quizzes and Participation

There will be 10 points per lab session covering quizzes, presentations, participation, and attendance. (The first class meeting and the day of exam 1, however, will only be worth 5 points.) 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 and/or topics that we covered in the previous lab. 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 show up late or who leave lab early and then return at the end of the class 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. 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.” Your answers will be judged and graded based on completeness, originality, and level of critical thinking.

Please be courteous about taking breaks during class. Class usually begins with a quiz and 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. If you take excessively long breaks you will not receive participation points.

Lab Exams

Lab practical 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.

Ecology Project

During weeks 9 and 10 of lab you will carry out a research project related to ecology and biodiversity. Working in a group, you will develop a hypothesis, conduct an experiment, analyze data, and present the results of your study. Your project will be due at the beginning of class on Week 11. More detailed instructions will be given when the project is introduced in Week 9.

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 the week of April 28. See the handout for more information.

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. **Photographic Atlas for Biology Lab.** By Van De Graaff and Crawley, 7th Edition, Morton Publishing Company. 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.
3. **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.
4. **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; 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 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.** 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.

BIOL 1150 Laboratory Schedule for Spring 2014

#	Week	Topics (numbered items refer to exercises in the lab manual)
1	1/27	Introduction, Syllabus, (1) History of life
2	2/3	(2) Biological classification, (3) Microbes I, (4) Microscope review
3	2/10	(5) Bacteria Cells, (6) Microbes II, (9) Cladograms
4	2/17	(7) Protists, (10) Intro to Plants
5	2/24	(11) Bryophytes, (12) Pteridophytes, (13) Gymnosperms
6	3/3	(14) Angiosperms, (15) Supermarket Botany
7	3/10	Exam 1. Afterwards: Field Ecology and Biodiversity
8	3/17	(28) Ecology
9	3/24	Field Ecology and Biodiversity
10	3/31	Field Ecology and Biodiversity
11	4/7	Ecology Project Due. (9) Fungi and Lichen, (16) Animal Tissues.
12	4/14	(17) Porifera, (18) Cnidaria (19) Platyhelminthes, (20) Annelida, (21) Mollusca, (22) Nematoda, (23) Arthropoda
-	4/21	Spring Break- no classes
13	4/28	Biosurvey Assignment Due. (24) Echinodermata, (25) Chordata.
14	5/5	(26) Frog dissection, (27) Animal adaptations
15	5/12	Exam 2.

“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)