

BIOL 1150-001 "General Biology II" Course Syllabus



I. General Information

Instructor: Dr. Patrick Kelly
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Office Hours: M&F 9-10 AM, or by appointment.
Class website: Blackboard

Class Sessions: MWF 8-8:50 AM, DBH 166



Pre-requisite: Pass BIOL 1050 with a C- or better. Students who do not meet this pre-requisite will be dropped from the course. If you are a transfer student from a local community college (CC) you should take the entire general biology sequence either here or at your CC and transfer both classes here. If you want to split the sequence between CC and us, it probably won't work due to complicated articulation rules that the University has set.

II. Course Description

This course is the second in the two-course majors' intro. biology series and emphasizes evolution, organismal biology, including the diversity of life, and ecology. As with BIOL 1050, the purpose of BIOL 1150 is twofold: (1) to introduce students to the breadth of the biological sciences and (2) to help beginning biology majors master fundamental concepts, theories, and skills needed for success in later courses. Course learning objectives are met through a combination of lecture and lab experiences. **A grade of C- or better is required to move forward into upper division biology.**

This is a survey course—a course that provides general information about the subject matter—and as a result, we have to cover a lot of material quickly. I will ask you to think at high cognitive levels and how to apply what you learn in this class not only to upper division biology course but to choices you make in your life. **This course is fast paced, language intensive, and utilizes math! It is critical that you spend considerable time outside of class actively studying to be successful in the course.**

Lab: There is a required lab section for this class, for which you register separately. Along with this lecture section, you should be enrolled in one of the following 3 lab sections, 2 of which are taught by me:

Section	Day and Time	Instructor
BIOL 1150-002	Wed., 9:00 – 11:50 PM	Dr. Patrick Kelly
BIOL 1150-003	Mon., 2:00 – 4:50 PM	Dr. Patrick Kelly
BIOL 1150-004	Wed., 2:00 – 4:50 PM	Dr. Sara Emerson

All lab sections meet in Naraghi 206. Note that lab sections have separate syllabi. The lab manual is available for purchase from the campus bookstore (\$10.60 - \$14.10). Whenever possible, I will try to post lab handout—which you can download, print, and study prior to lab each week—to the class Blackboard (**Bb**) site. Points earned in lab factor into your overall BIOL 1150 grade, but you will receive only one grade for BIOL 1150 despite being enrolled in two separate sections.

Like all of our instructors, I believe in reinforcing concepts from lecture with lab activities that illustrate these concepts. Students in science lecture courses do better if they take the relevant lab in the same semester. Since lab topics are fixed due to materials and specimens required for each lab meeting, I will endeavor to reinforce, assess, and keep pace with concepts and skills you learn in lab. This means the lecture schedule is a bit fluid and may have to adjust occasionally to better align with lab.

Text: *Campbell Biology in Focus, 2nd or 3rd edition* by Urry et al. This is the same text since you used in BIOL 1050. If you have to buy a copy, the CSU Stan bookstore has loose-leaf versions (3rd edition: \$120, buy; \$108, rent). You can also find the text easily online. You should bring the relevant sections of the text to class to follow along. Students who don't use the textbook generally earn lower grades than those who do.

Announcements: Check **Bb** often for updates, study guides, etc.

III. Overall Learning Objectives

Our goal is not to cover every topic in biology. That would be an impossible task in a lifetime, let alone a one-semester class! Instead, we will focus on the most important concepts in organismal biology, and on improving our skills to **Think Like a Biologist**.

Course Goals—In a broad sense, when completing this class you should be able to:

1. *Demonstrate your ability to think like a biologist;*
2. *Speak & write coherently about biology with biologists and non-biologists alike;*
3. *Apply biological knowledge to make informed decisions in your life.*

More specific to biology, you should be able to articulate how:

1. *All living things arise from a common ancestor.*
2. *Species evolve over time and how new species arise.*
3. *Phylogenies/Cladograms can be used to show relatedness of species and the evolution of new species from ancestral ones over time.*
4. *Individuals transmit genetic information to offspring, and how some alleles confer higher fitness than others in a particular environment.*
5. *Genotypes influence ranges of phenotypes in individuals, and how actual phenotypes result from interactions between alleles and the environment.*
6. *Natural selection leads to the evolution of structures that tend to increase fitness within the context of evolutionary, developmental, and environmental constraints.*
7. *Energy and matter flow between organisms and the abiotic environment.*
8. *At each trophic level in an ecosystem there is less energy available than the preceding level.*
9. *The size and structure of populations is dynamic.*
10. *Within ecosystems, interactions between individuals form networks, and how changes in one node of a network can cause changes in other nodes, directly or indirectly.*
11. *Biodiversity impacts many aspects of ecosystems.*

As learners and citizens of this class you should be able to:

1. *Practice self-assessment and reflection while developing the necessary study skills for success in science coursework.*
2. *Use scientific inquiry as a means of understanding the natural world.*
3. *Make connections between the facts of science and its relevance to broader societal issues.*
4. *Demonstrate a professional and respectful manner when communicating and working with peers, instructors, and staff, as practice for success in the workplace and community.*

IV. Learning Environment and Responsibilities

My Teaching Philosophy: The number one reason I am here is to help each of you become outstanding scientists and to succeed in your academic goals. I am concerned about your success in my class, at Stan. State, and in life. I will do my best to provide you with a stimulating, useful, and fun course; treat you with respect; assign grades impartially; be available to help during office hours and via email; do my best to return assignments and post grades in a timely manner.

Summary Expectations:

1. You are expected to treat everyone in class with respect and kindness. In order to create a thriving learning community, it is important that we encourage one another to do our best and to not put anyone down. (more below)
2. To avoid distracting yourself and others, please do not phone, text, email, social network, surf the web, or do work for other classes during class. (more below)
3. All electronic devices (phones, tablets, music players, etc.) must be turned off and kept in your bag during class.
4. I strongly discourage the use of laptops for note-taking during lectures and presentations. This is because there is now more than ample evidence that students who take notes by hand remember conceptual information better than those who take notes on a computer¹. There is no substitute for good notes, but learn how to effectively take notes (don't transcribe).

¹ Holstead, C.E. 2015. The benefits of no-tech note taking. Chronicle of Higher Ed. (March 4, 2015)

5. Come to class properly prepared by doing any assigned readings prior to class. Engage the material deeply and critically. Treat your education as if it is helping to prepare you to change the world (which hopefully it is).
6. Attend every class session, be on time, and participate fully. (more below)
7. You are required to work independently during in-class assignments and on take-home assignments, unless instructed otherwise. Turn in assignments on time.
8. Cheating and Plagiarism—Maintain the highest standards of academic integrity. All work that you submit must be your own. Plagiarism—taking direct quotes or ideas from other sources without attribution—is cheating, and will not be tolerated. Reports and other assignments with plagiarized material will receive a zero. A second incident of plagiarism by a student will result in an automatic F in the course and being referred to the Dean of Students for further disciplinary action.
9. Take the initiative to use course and campus resources to get the most out of the course.
10. Please be neat and clean up after yourself.

Participation and Attendance: Please arrive to class on time and ready to learn. Students should attend every class session. Research shows that final grades are positively correlated with attendance and attention. To this end **you will be able to earn classroom activity points every class meeting, but cannot make them up if you are absent.** Thus, if you miss more than two class meetings, your final grade will be significantly negatively affected! Homework and in-class assignments are due before you leave class. You will talk and work frequently in small groups and sometimes present your ideas publicly. Finally, please do not disrupt the learning environment, rights, and property of others. All gadgets and technology not conducive to learning in the course should remain unused during class. Be honest, hold yourself accountable for your actions, and hold me accountable for mine.

Respectful Classroom Atmosphere: This class is a “judgment-free zone” at all times. If you disagree with somebody’s opinion on a subject you do not have the right to sling insults, raise your voice, or criticize them. I most certainly encourage respectful disagreement on controversial topics, and conversations are livelier if people disagree on a subject. However, polite civil disagreement and outright hostility are two very different things. I will not tolerate hostility in the classroom in any form and anyone participating in this behavior will be escorted out of the room and not allowed to return for the rest of the class period.

V. Content, Activities, Assessment, and Logistics

Evolution: “*Nothing in biology makes sense except in the light of evolution.*” (Theodosius Dobzhansky, 1900-1975) Maybe you heard that famous quote in Biol 1050. Prof. Dobzhansky was a geneticist and evolutionary biologist. Born in the Ukraine, he emigrated to the US as a young man and went on to become one of the central figures of evolutionary biology. In his later years (1971-75), he worked at UC Davis, where he did seminal work on the genetics and evolution of fruit flies (*Drosophila*), and surprisingly, that included field work on this species in the Sierra Nevada. Not surprisingly, evolution and natural selection, central tenets of biology, are critical aspects of this course, and will be openly discussed and referred to frequently.

Math: Every biologist uses math, including algebra, statistics, and/or calculus. In this class you will use math as it applies to biology. This mostly includes making and interpreting graphs, but will also include basic statistics, and perhaps a little calculus, as needed to better understand biology. I will help you and there will be chances to practice in class.

iClickers: You will need to purchase/rent/reuse an iClicker, available at the CSU Stan bookstore (rent - \$38; purchase - \$48). Register it at www1.iclicker.com/register-clicker/. Expect to use it most days in class.

Assignments: You will submit three summaries of course content, each spanning a unit of course material. See the document “Summary Rubric” on **Bb** for tips on how to maximize points on summaries. I will get graded summaries back to you by the next class meeting so you can use them to study. Other assignments will come in the form of preview/review questions (x3), in-class concept reviews & discussion, and clicker questions. If you are absent from class you cannot make up clicker or concept review points (unless you have a legitimately excused absence).

Preview/Review Questions: The Preview/Review questions for each chapter help you to prepare for each class session and later test your knowledge of terms, concepts, and mastery of the material. Please use these questions to prepare for class each day; after we complete each chapter, use the questions to test yourself. P/R Qs are also homework for the course. You will submit typed answers to the questions through a Google form. The link will be available on **Bb** and via email. I recommend typing answers to the questions as we complete each class session. My hope is that working your way through the Preview/Review questions will allow you to earn points while interacting with the material to master the topics we will cover this semester.

Exams: There are two midterms and one final exam. Exams will consist of multiple choice and short answer questions. You will need a scantron form for all exams. Requests for early exams must be submitted *in writing* prior to the scheduled exam with

evidence of your hardship. If you miss an exam and have to make it up, you will also need to provide some evidence of hardship.
No makeup exams will be given after graded exams are returned to the class.

Special Accommodations and Recording Lectures: This course is Americans with Disabilities Act (ADA) accessible. Students with documented disabilities should seek special accommodations for all classes through the Disability Resource Services (DRS) office on campus (Library Annex, Building #210). If DRS notifies me that you require ADA accommodations, you will receive them. Examples of ADA accommodations include extra time for exams, permission to record lectures, and note-taking assistance. If you wish to record my class in any form (video, audio, still pictures, etc.) without accommodation from DRS, please ask. Otherwise that constitutes intellectual property theft and will be dealt with accordingly. NOTE: Student athletes who will miss class for games/matches should have their coach contact me, and I will accommodate your schedule by allowing alternate test dates and/or excusing points missed in class.

Grades: There are 1000 points possible in this course:

Activity/Assignment	Points Possible	% of Total Points
Midterm Exams	200	20%
Final Exam	200	20%
Summaries (x3)	100	10%
Concept Reviews (x15)	75	7.5%
Prev/Rev Qs (x3)	100	10%
Clicker Questions	75	7.5%
Lab section	250	25%
TOTAL	1000	100%

I give + and – grades as follows: A 93-100% A- 90-92%; B+ 87-89% B 83-86% B- 80-82%; C+ 77-79% C 73-76% C- 70-72%; D+ 67-69% D 63-66% D- 60-62%; F 0-59%. If you take the credit/no credit option: CR 70-100% NC 0-70%.

Important Dates: The last day to drop (or add) the class is the census date, Friday, Feb. 21st. This is also the last day to change your grading option; it is your responsibility to do so by 5 PM on that day. I strictly adhere to the grading option Academic Records has on file for you when I submit final grades. **Unless it is to replace an incomplete or to correct a mistake in my grading, I will not change grades once final grades have been submitted.**

VI. Getting Help

Getting Help & Study Skill Development: The following suggestions may help you succeed in this and other classes. 1) **Read the assigned pages** before class and bring your questions to class. 2) **Attend class** and participate actively. 3) **Complete all assignments** and turn them in on time. 4) **Take notes** in an effective way, one that is helpful to your studies (recall and understanding). 5) **Join a study group!** Students who study in groups tend to do better than those that study alone. 6) **Study** to increase your knowledge and understanding, not just for exams, but when studying for exams, start well before the date of the exam. 7) **Go to bed early** the night before an exam, and be well-fed and hydrated before exam time. 8) **Determine how you learn best** and then stick with a preference or process that works for you.

Improving one's study habits takes commitment and discipline. Deep learning takes time and is impossible to do the night before an exam. Commit to regular study. **Form a study group that meets regularly** so you can talk about concepts and review terminology. When studying for exams, focus primarily on lecture notes, P/R questions, and the assigned text readings.

Campus Resources for students struggling with biology:

1. The **Commons**, located in 124 Naraghi Hall, is a free walk-in science and math tutoring center.
2. The **Louis Stokes Alliance for Minority Participation (LSAMP)** in the sciences offers support in science and math for students who face or have faced social, educational or economic barriers to pursuing careers in science and math fields. Visit their website or office (Naraghi 375 or DBH 278) for more information.
3. **Tutoring Services** on the ground floor of the CSU Stan Library (Library Annex, Building #210) has drop-in tutoring for biology; check their office or website for their schedule.
4. The **Academic Success Center** (MSR 210).
5. **Student Support Services** (MSR 245).

Finally, I of course will work to help you both during and outside of class time. Please come to my office hours, communicate with me, and let me know your thoughts about the material. We'll talk Biology to better your ability to **Think like a Biologist**.

Week	Date	Topic Schedule (tentative)	Read/Due:	Lab This Week
1	27-Jan	Class introduction		Deep time, classification
	29-Jan	Broad patterns of evolution – what is “deep time”?	Ch. 23	
	31-Jan	Origin of species– where do species come from?	Ch. 22	
2	3-Feb	Phylogeny – <i>tree thinking!</i>	Ch. 20	Phylogenies
	5-Feb	Phylogeny – (cont.)	Ch. 20	
	7-Feb	Evidence for evolution, phylogeny – <i>how do we know what we know about evolution?</i>	Ch. 19	
3	10-Feb	Evidence for evolution, phylogeny – (cont.)	Ch. 19	Microbes, Microscopes, Bacteria
	12-Feb	Biogenesis – <i>how did the first living cell arise?</i>	Ch. 24.1	
	14-Feb	Prokaryotes (bacteria and archaea)	Ch. 24.2-24.5	
4	17-Feb	Protists – <i>these are eukaryotes?</i>	Ch. 25 Due: Summary 1 & P/R Qs 1	More Microbes, Protists
	19-Feb	Protists – (cont.)	Ch. 25	
	21-Feb	Flex day, review		
5	24-Feb	Midterm #1	Be prepared!	Bryophytes, Ferns and Fern Allies
	26-Feb	Plants 1 (mosses, ferns)	Ch. 26, bits of Chs. 28-31	
	28-Feb	Plants 1 (mosses, ferns) – (cont.)	“	
6	2-Mar	Plants 2 (gymnosperms, angiosperms)	“	Conifers, Flowering Plants, Supermarket Botany
	4-Mar	Plants 2 (gymnosperms, angiosperms) – (cont.)	“	
	6-Mar	Plants 2 (gymnosperms, angiosperms) – (cont.)	“	
7	9-Mar	Bioskills #1 – the significance concept, t-test, ANOVA		Open Lab, Review
	11-Mar	Bioskills #2 – correlation and regression		
	13-Mar	Flex Day, review		
8	16-Mar	Fungi	Ch. 26.2	Lab Exam 1, Fungi
	18-Mar	Fungi		
	20-Mar	Inverts 1	Ch. 27, bits of Chs. 32-39	
9	23-Mar	SPRING BREAK (March 23-27)		
10	30-Mar	Inverts 1 – (cont.)	“	Animal Tissues, Porifera, Cnidarians
	1-Apr	Inverts 2	“	
	3-Apr	Inverts 2 – (cont.)	“	
11	6-Apr	Chordate diversity – <i>we’re related to those?</i>	“	Platyhelminthes, Annelids, Molluscs,
	8-Apr	Chordate diversity – (cont.)	“	
	10-Apr	The Easter Bunny— <i>Where there’s a will there’s a way.</i>	“	
12	13-Apr	Human evolution – <i>so, we’re not descended from monkeys?</i>	“; Due: Sum. 2 & P/R Qs 2	Nematodes, Arthropods
	15-Apr	Flex Day, review		
	17-Apr	Midterm #2	Be prepared!	
13	20-Apr	Population ecology – <i>is that population growing? Should it?</i>	Ch. 40	Echinoderms, Chordates
	22-Apr	Population ecology – (cont.)		
	24-Apr	Population ecology – (cont.)		
14	27-Apr	Community Ecology – <i>who wins and who loses?</i>	Ch. 41	Frog Dissection, Animal Adaptations
	29-Apr	Community Ecology – (cont.)		
	1-May	Chemical cycling – <i>why are food chains so short?</i>	Ch. 42-1-42.4	
15	4-May	Chemical cycling – (cont.)	“	Ecology, ...
	6-May	Conservation Biology and Global Change	Ch. 43	
	8-May	Conservation Biology and Global Change	Ch. 43	
16	11-May	Conservation Biology and Global Change	Ch. 43	Lab Exam 2
	13-May	Helping the Earth – <i>what can we do?</i>	Ch. 42.5, 43 Due: Summary #3 & P/R Qs 3	
	15-May	Helping the Earth – (cont.)	Ch. 42.5, 43	
17	18-May	FINAL EXAM → 8:30 – 10:30am	Be prepared!	