

BIOL 1050 General Biology I

T, R 12:30P – 1:45P, Bizzini 117, Fall 2015

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Office hours	T, R 3:00P-4:00P, or by appointment
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Webpage	https://blackboard.csustan.edu/ (lecture notes, announcement, <i>etc</i>)

Course Description (Purpose of Course)

The purpose of the introductory series is twofold: (1) to introduce students to the breadth of the biological sciences and (2) to help beginning biology majors master the fundamental facts and theories needed for success in subsequent courses.

This course is the first in the two-course series and will focus on cellular and molecular biology, genetics, and microevolution. The learning objectives will be met through a combination of Lecture (LE) & Lab (LA) experiences. **A grade of C- or better is required to move forward into General Biology 2 (BIOL 1150).**

Course objectives

Students will be introduced to foundational principles in biology:

1. All living things come from a common ancestor.
2. Biological structures exist at all levels of organization, from molecules to ecosystems.
3. A structure's physical and chemical characteristics influence its interactions with other structures, and therefore its function.
4. Biological molecules, genes, cells, tissues, organs, individuals, and ecosystems interact to form complex systems.
5. Cells/organs/organisms have multiple mechanisms to perceive and respond to changing environmental conditions.
6. Energy and matter flow between organisms and the abiotic environment.
7. Organisms have complex systems that integrate internal and external information, incorporate feedback control, and allow them to respond to changes in the environment.
8. Organisms inherit genetic and epigenetic information that results in their physical and behavioral characteristics.
9. Species evolve over time, and new species can arise, when allele frequencies change due to mutation, natural selection, gene flow, and genetic drift.

Student Learning Outcomes:

Successful students will be able to:

- Describe the properties that unite the three domains of living things. (LE)
- Identify relationships between structure and function at all levels of biological study. (LE, LA)
- Describe the major groups of biological macromolecules and explain their importance of each to cellular structures and functions. (LE)

- Identify structures of prokaryotic and eukaryotic cells and explain the functions they perform. (LE, LA)
- Describe how the cell integrates into the hierarchical organization of living systems. (LE)
- Explain how and why cells communicate to coordinate their activities. (LE)
- Explain how energy and materials flow within and between cells, and between cells and the environment. (LE, LA)
- Identify the processes by which the cell obtains and produces needed resources. (LE, LA)
- Explain the stages in the cell's life cycle in single celled and multicellular organisms, including growth, cell reproduction, and apoptosis. (LE, LA)
- Describe the process by which cells pass on genetic information to their offspring and explain how sexual reproduction results in genetic diversity. (LE, LA)
- Describe how genes encode information and explain how this results in the structure and function of organisms. (LE)
- Identify the processes that result in changes in genomes, resulting in unique individuals, populations and species. (LE, LA)
- Explain the scientific method and describe specific techniques used to scientifically study living things. (LE, LA)

Students will also:

- Practice self-assessment and reflection while developing the necessary study skills for success in science coursework. (LE, LA)
- Practice using the process of scientific inquiry as a means of understanding the natural world. (LE, LA)
- Make connections between the factual information provided by science and the relevance of biology to broader societal issues. (LE, LA)
- Demonstrate a professional and respectful manner when communicating and working with peers, instructors, and staff, as practice for success in the workplace and community. (LE, LA)

Course Requirements

Prerequisite: Grade of A or B in high school biology, or BIOL 1010. Co-requisite: You must enroll in an associated lab section.

Required Text and Materials

1. **Loose-leaf Campbell Biology**, 10th edition by Reece et al., 2013

- **Students who bring the book to class follow along better. Please purchase a loose-leaf copy of this text.**
- We selected this text as the primary book for this course because it is comprehensive, relatively easy to read, has excellent figures, is a standard in the field, and has good online resources.

2. You will need to use the **Blackboard course site** for this class.

- Go to <http://my.csustan.edu> and click on the "Blackboard" link at the bottom of the page.
- Login and enter the Biology 1050-001 course site to find course content. Note that you have a separate course page for your lab class (your instructor may or may not use this page).
- There are many student computer labs available on campus; *you do not need to own a computer.*

ADD/DROP Policies

Sep 6 is the last day to add for Fall 2015. **Sep 21** is the last day to drop the course. The add/drop policies for this class are the same as the university add/drop policies.

Grading Policies

Most of your grade for the lecture portion of the course will be based on lecture exams. There may be opportunities to gain a few points of extra credit in lecture and lab. Lab points are added to lecture points to calculate your total grade in the course. I do not use a curve. This course is graded plus/minus, and there is a CR/NC (Credit/No Credit) option.

1. Exams:

- a. Exams are written with the course objectives in mind. Because the information in this course cannot be divided into separate, discreet units, exams will, to some extent, be cumulative.
- b. Questions that may appear on exams include multiple choice, matching, short answer, discussion, and problem-solving. You do **NOT need Scantron** for the exams. You will mark on the exam paper directly. Note that:
 - i. Take care to erase well those answers you do not want marked.
 - ii. Illegible answers in written portion will not be graded.
 - iii. Correct spelling and grammar are necessary for effective communication. Therefore, spelling and/or grammatical errors will result in loss of points on exams.
- c. Unless otherwise stated, exams will begin at the beginning of the scheduled class time. You must arrive on time for the exam. **Students who arrive after the first student has finished with the exam and left the room will not be allowed to take the exam.**
- d. You will not be allowed to leave the room until you have finished and turned in your exam.
- e. After graded exams have been returned, you have **one week** to review exams or dispute errors; no grades will be changes after that time.

4. **Make-up exams can be given ONLY of the Final under extenuating circumstances and only with documentation:** Make-up exams will be different and will consist only of short answers and essay questions. Failure to appear at exam time without 24 hours prior notice to instructor with an appropriate excuse, or an appropriately documented emergency, will result in zero points for that exam. No Make-up for regular exams!

2. Total points for course = 540 pts

3 exams (120 pts/exam, 40 questions)	360 pts
Comprehensive final (60 questions)	180 pts

- Additional assignments for bonus points may also be given throughout the semester. The instructor reserves the right to give unannounced quizzes if it becomes apparent that students are not keeping up with the material, there are an unacceptable number of absences and/or if students show up late for class.

***No late assignments will be accepted.**

3. Grading will be based on a percent scale:

93-100 = A, 90-92 = A-, 87-89 = B+, 83-86 = B, 80-82 = B-, 77-79 = C+, 73-76 = C, 70-72 = C-, 67-69 = D+, 60-66 = D, < 60 = F

4. NOTE:

- a. Take care of your grade. **Remember you earn your grade;** it is not given to you.
- b. The instructor reserves the right to reduce your grade due to excessive absences and/or tardiness.
- c. Grades/scores will not be sent to students via email or be given over the telephone.

d. Instructor will not calculate student's scores or grade.

Expectations of Students

- **Be respectful of others** by *arriving on time, giving your attention* to whoever is presenting, *listening to the ideas* of your classmates, *turning off cell phones*, and generally being polite. This also means **no text-messaging** (yes, the person at the front of the room *can* tell what you are doing) and **no internet surfing** (it's distracting to those sitting around you).
- **Engage the course material** through participation in class, reading the text, and thinking about biology outside of class.
- **Maintain your academic integrity.** *Your integrity is your most valuable asset as a student* and in your future career as an educated person. In line with this, it is the policy of the Department of Biological Sciences that anyone caught *cheating or plagiarizing* will receive a grade of F for the course. I reserve the right to request any student suspected of cheating to take a second, different exam on the material. Please protect yourself by making your integrity obvious.

Expectations of the Instructor

- Same as those for students, in terms of respect for participants and engagement in the course. *Protecting your privacy and maintaining an environment in which you can learn are my top priorities.*
- Be **open to feedback** on the course and be flexible in order to make appropriate changes to meet student needs.
- Be **fair and consistent in assessment** of student learning and provide appropriate feedback to facilitate improvement.
- Be **available to students** outside of class time to answer questions and discuss class material.

Special circumstances: I understand that unusual circumstances can temporarily alter your availability for our class. If you know ahead of time that you will have a conflict on an important day, please get in touch with me as soon as possible. If an unforeseen incident causes you to miss an exam or your presentation, get in touch with me *as soon as your circumstances allow*. If you miss a regular class day, please get the notes from a friend, review the posted lecture notes, and come to my office hours with any questions you may have.

Learning styles and needs: As an instructor, I believe that part of my job is to intentionally facilitate the success of students with different learning styles and needs, and I do my best to incorporate multiple ways of learning into my courses and assignments. Please meet with me privately *as soon as possible* if there are particular accommodations that will foster your individual success in this course.

Online Course Materials:

Information for the course (Lecture notes, syllabus, related materials including exam results, etc.) can be found on the course's Blackboard (<https://blackboard.csustan.edu/>). Lecture materials are copyrighted and are only for the personal use of students enrolled in the course. Do not give the username/password to anyone else. If you do so no more material will be provided.

Class schedule: tentative and subject to change

WEEK	DATE	TOPIC(S)	READ/DUE
1	Aug. 25	Intros: Syllabus Evolution, the themes of biology, and Scientific inquiry	Ch. 1,
	Aug. 27	Chemistry for biologists	Ch. 2
2	Sept. 1	Water	Ch. 3
	Sept. 3	Water	Ch. 3
3	Sept. 8	Carbon	Ch. 4
	Sept. 10	Four classes of macromolecules	Ch. 5
4	Sept. 15	The tour of the Cell	Ch. 6
	Sept. 17	The tour of the Cell Membrane Function	Ch. 6
5	Sept. 22	MIDTERM EXAM #1	Ch. 1-6
	Sept. 24	Membrane structure and function	Ch. 7
6	Sept. 29	Metabolism	Ch. 8
	Oct. 1	Cell respiration, fermentation	Ch. 9
7	Oct. 6	Photosynthesis	Ch. 10
	Oct. 8	Cell communication	Ch. 11
8	Oct. 13	<i>Non-instructional day, no class</i>	<i>Have fun!</i>
	Oct. 15	Mitosis	Ch. 12
9	Oct. 20	MIDTERM EXAM #2	Ch. 7-12
	Oct. 22	Meiosis and sex	Ch. 13
10	Oct. 27	Mendel and the gene idea	Ch. 14
	Oct. 29	Mendel and the gene idea	Ch. 14
11	Nov. 3	Chromosomal basis of inheritance	Ch. 15
	Nov. 5	Molecular basis of inheritance	Ch. 16
12	Nov. 10	Gene expression	Ch. 17
	Nov. 12	Gene regulation	Ch. 18
13	Nov. 17	MIDTERM EXAM #3	Ch. 13-18
	Nov. 19	Gene regulation	Ch. 18
14	Nov. 24	Viruses	Ch. 19
	Nov. 26	<i>Happy Thanksgiving!</i>	<i>Don't eat too much</i>
15	Dec. 1	Viruses	Ch. 19
	Dec. 3	Biotechnology	Ch. 20
16	Dec. 8	Biotechnology	Ch. 20
	Dec. 10	Genome evolution	Ch. 21
17	Dec. 15	<i>No class, finals week</i>	<i>Do good on your other final exams!</i>
	Dec. 17	Cumulative FINAL EXAM 11:15am-1:15pm	