Biology 1050: General Biology I (MWF, Spring 2016)

Instructor: Dr. Laurissa Hamilton
Office: N-257 **Office Hours:** MWF noon – 12:45pm, Mon 2 - 3pm, and by appointment
Contact Information: my office or after class (*best*) or lhamilton@csustan.edu (*good*) or (209) 667-3489 (*worst*)
CRN: 20141; **Section**: 001

Texts & Materials: All required and recommended materials are available in the campus bookstore. You may be able to find the same books for better prices by using online sources.

1. ***Campbell Biology with Mastering Biology***, 10th edition by Campbell and Reece, 2013, ISBN 9781269590068

- I selected this text as the primary book for this course because it is comprehensive, relatively easy to read, has excellent figures, and is a standard in the field. It also comes in a variety of formats.
- The 9th edition is probably fine to use, but you may wish to compare the 9th and 10th editions.
- You will use this book in General Biology 2, as well, so you will get a good return on your investment.
- You will have required assignments through the Mastering Biology website, so you must also purchase this module. If you buy a used book elsewhere, you can purchase access to Mastering Biology separately.
- The Mastering Biology will provide you tools that will assist your success and learning. Plus, you'll earn points for completing homework assignments!

2. The **i>Clicker** is **required** for this course. Any version of iclicker will work, except for the smart app.

- Using clickers in class helps to make lecture more interactive. It keeps you awake, allows you to earn participation points, and it helps me to gauge how well the class understands my presentation.
- Register your iClicker at www.iclicker.com right away Be sure to enter your Blackboard username (e.g. this is the same as your email login, for example, in my case it would be "lhamilton") as the Student ID.
- You *can* purchase a used iClicker and re-register it under your own name. Please do not pay extra to register a used clicker. We can do this for free in class.

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

- Go to http://my.csustan.edu and click on the "Blackboard" link on the left side of the page.
- Login and enter the Biology 1050-001 course site to find course content.
- There are many student computer labs available on campus; *you do not need to own a computer*.

COURSE DESCRIPTION AND OBJECTIVES

Course Requirements

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

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. Learning objectives and GE Goals 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.

Learning Objectives

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)

Assessment Methods, Grades, and Grading

The most practical assessment measure for content-heavy courses is the objective exam. Most of your grade for the lecture portion of the course will be based on lecture exams. Participation points will be available daily in lecture, through participation with your iClicker. Questions may include pre-test quiz questions, comprehension questions, and summary/review questions. Thus, you have the opportunity to earn participation points through the entire class period. 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.

Any homework or extra credit assignment (if provided) must be turned in on the day and time it is due. ***Your end of the semester homework score will be weighted so *your overall homework total will constitute 7.5% of your final overall course grade*.*** **No makeup assignments will be given, but students can drop their 2 lowest homework scores**.

The last day to apply for the CR/NC grading option is Wednesday, May 11th. To do so you must contact me in person and have your form filled out and ready for me to sign. It is your responsibility to turn this form in to Enrollment Services. I will follow the grading option indicated on the final grade sheet supplied by Enrollment Services. Consult with your advisor before making your decision. Once you have selected the CR/NC option you cannot opt for a grade. **No grades will be changed once they have been submitted to the registrar**. The last day to drop the class is Wednesday, February 24th.

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). **If you use a laptop computer in class it must be used only for purposes relevant to the course and you must sit in the first row**. A first time violation will result in a 10-point deduction from your grade. A second violation will result in 30-points deducted from your grade and you will no longer be allowed to use a laptop in the class. During in-class group assignments each member of a group should fully participate and contribute.

- **Engage the course material** through participation in class, reading the text, and thinking about biology outside of class.
- Students are expected to **take exams** during the scheduled dates and times. Requests for early exams must be submitted in writing to the instructor at least ***one week*** prior to the scheduled exam. **No makeup exams will be given after an exam has been returned to the class; any unexcused missed exams without a proper written and verifiable excuse will be recorded as a zero.** If you miss an exam for a legitimate emergency it is your responsibility to notify the instructor immediately**. If provided, makeup exams will be different from regular exams, may include essay and short answer questions, and only will be allowed for a valid documented emergency absence (e.g. a doctors note, signed on the date of the exam).** These must be completed as soon as possible and no later than within one week of the originally scheduled day of the exam. It is the responsibility of the student to contact the instructor and make arrangements to take the test within the allowed time.
- **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. Protect yourself by making your integrity obvious.

Expectations of the Instructor

- Same as those for students, in terms of engagement in the course, respect for participants, and observation of lab safety procedures. *I do my best to protect your privacy and to maintain an environment in which you can learn.*
- 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.
- Be **available to students** outside of class time to answer questions and discuss class material.

How you Earn your Grade in Lecture

Mastering Biology Assignments

Mastering Biology (www.masteringbiology.com) provides a wealth of tools for students and instructors. In each chapter, you can explore information about the topics, watch videos, quiz yourself, and work through problems. **The course code for Mastering Biology is: MBHAMILTON73243. The first two assignments (Introduction to Mastering Biology and Chapter 1) are posted and are due by 11:59PM on Friday, February 5th.**

Throughout the semester, I will post additional assignments to motivate you to engage with the material. Assignments will be graded for completeness and correct answers. My hope is that the assignments will allow you to earn points while interacting with the material to really master the topics we will cover this semester. If you did not purchase Mastering Biology bundled with your textbook, then you will need to purchase the site access separately.

Exams: There will be four (4) 100 point regular exams during the semester and a 100 point ***comprehensive*** final exam. The final exam will be on Wednesday, May 25, from 11:15 a.m.- 1:15 p.m.in N101. Exams will consist of multiple choice, fill in the blank, true/false and matching questions (matching can include labeling diagrams) to be answered on a Scantron (bring a Scantron form 882-E and pencil). Questions will cover material from lecture. If you are late to an exam, then you will have less time to complete the exam so plan your schedule accordingly. Traffic and/or car problems are not acceptable excuses for being late. During exams, cell phones must be turned off and hats must be removed. If your cell phone rings during an exam five (5) points will be deducted from your score. Students who arrive after the first exam of the day has been turned in will not be allowed to take the exam. No food, drinks, or headphones are allowed during the exam period. You must not leave the room during an exam/quiz without the instructor's permission. **You have one week following return of any exam or assignment to meet with me to work out any reasonable changes in grading.**

The instructor reserves the right to give unannounced quizzes if it becomes apparent that students are not keeping up with the material and/or there are an unacceptable number of absences. If you happen to be absent that day or you fail to follow instructions, you will receive a grade of 0 for that quiz.

In-class Assignments (50 –100 points): Depending on timing, there will be various in-class group assignments throughout the semester. Each assignment will be worth 10 points; one day's assignments will not total more than 20 points. **In-class assignments are supplemental activities so there are no make-ups on these assignments, but students can drop their one lowest assignment score.** These assignments are important because they provide opportunities for cooperative learning and give time for you to

discuss new concepts and terminology with your peers. In addition to helping you learn new material and do better on tests, the in-class assignments will be weighted to represent 7.5% of your final overall course grade. Students who are present generally do very well on in-class assignments. Because these are ***group*** activities, *4 points will be deducted from groups consisting of more or less than 4 or 5 individuals*, unless prior approval has been arranged.

Audio\Video Recording: Recording of lectures is not permitted without written consent from your instructor.

Tips for learning the material

In my experience, many bright students are simply not challenged during high school. As a result, these smart and capable people haven't had the opportunity to develop the study skills needed for success in the university. Don't let the first exam catch you by surprise This course is content-heavy, and you will **not be able to cram** with much success for the exams. **Make your study time a daily habit. I encourage you to study the material more deeply than we cover in class**, in order to perform well at the level of the test.

- Skim the whole chapter before you come to class. Carefully read and interpret the figures and tables and carefully read each vocabulary term.
- Be early to class for special study tips, sneak previews for lab, and to engage with your instructor
- Watch any assigned videos before coming to class. These will give you a preview of the day's material.
- Take notes in class based on what you hear. Do not spend the class period copying every word off my slides. These same words can be found in your text.
- After class review your notes. Go back and read the textbook to fill in gaps in your understanding. **Some students have been very successful by copying out their notes onto flashcards for study.**
- After class, write 7-10 exam questions for the material. This will give you a study sheet for before the exam.
- When you study, don't fool yourself! When you page through the textbook, everything will look familiar. This doesn't mean that you personally own the knowledge yourself. Make it yours! After each class day, without looking at your notes or the book, write down a list of the topics and subtopics covered. Write down key words and their definitions. Make your best sketch of the figures/illustrations presented. After this, open your text and see how well you did. The parts you missed entirely are the parts you need most to study, the parts you partially remembered also need some attention. The parts you know perfectly are part of your own knowledge set.
- **You need to study the material more deeply in the text than is covered in lecture, in order to be able to readily answer questions on the exams.**
- **Every lab point can count in your favor**, or against you. Make sure performing well in lab is part of your plan for success

Participation

You will use your clicker to respond to in-class questions. This helps me gauge your level of comprehension and will help me with the pacing of the material. It also allows me to reward you for being dedicated in your lecture attendance. I know things come up, and you might miss a day or two of class; don't worry, *it will be safe to miss 3 days without penalty*. *Hint: put **three** spare batteries in your backpack in case your i>Clicker fails*

You must be present to earn participation points.

Asking another student to click for you OR clicking for someone else is *obviously* cheating.

Anyone using more than one clicker will receive an F for the course.

Tentative Course Outline

(Subject to Change)

Lecture Schedule	
Chapter #	**Campbell**
1	Introduction/Science
2	Chemistry of Life
3	Water and Life
4	Carbon
5	Macromolecules
6	The Cell
7	Membranes
8	Metabolism
9	Cellular Respiration
10	Photosynthesis
11	Cell Communication
12	Cell Cycle
13	Meiosis
14	Mendelian Genetics
15	Chromosomes
16	Molecular Basis of Inheritance
17	Transcription and Translation
22	Darwin and Evolution
23	Population Genetics
24	Speciation
	Additional if time

The above schedule, point scales, and procedures in this course are subject to change in the event of extenuating circumstances

Components of the Grade

Course Component	Possible Pts / Percentage
Exam 1 (Feb. 19; Ch. 1-7)	100 / 11%
Exam 2 (Mar. 18; Ch. 8-12)	100 / 11%
Exam 3 (April 20; Ch. 13-17)	100 / 11%
Exam 4 (May 16; Ch. 18-24)	100 / 11%
Comprehensive Final (May 25)	100 / 11%
Mastering Biology Assignments	~150 / 7.5%
Participation (clickers / assignments)	~100 / 7.5%
Lab	300 / 30%
TOTAL POINTS POSSIBLE	**~1050**

HOLIDAYS (NO CLASS):
SPRING BREAK: MON, MARCH 28 – FRI. APRIL 1
WARRIOR DAY: FRIDAY, MAY 13
LAST REGULAR CLASS MEETING: WEDNESDAY, MAY 18, 2016

TUTORING ON CAMPUS – Free tutoring services are available to assist you in most disciplines, including in biology Library 112; Phone (209) 667-3642; Web http://www.csustan.edu/Tutoring

CAMPUS COUNSELING SERVICES – Overwhelmed by the stress of juggling classes and your home life? Our campus offers **excellent** counseling services to help support you MSR 210; Phone (209) 667-3381; Web http://www.csustan.edu/Counseling/

STUDENT HEALTH CENTER – You have already paid for access to health care on campus. Services include: birth control, flu shots, immunizations, pharmacy, check-ups, HIV testing, TB tests, and doctor's notes for when you are sick Phone (209) 667-3396; Web: http://healthcenter.csustan.edu