Instructor: Dr. Marina M. Gerson  
Pronyms: she/her/they  
Office: N-272  
Office Hours: M/W 12-12:30, T/Th 9:30-10:30, and by appointment  
Contact Information: my office (best) or mgerson@csustan.edu (good) or (209) 664-6547 (worst)  

About Dr. Gerson: I grew up in Southern California, and I have had a passion for learning about little critters since I was little, myself. I was really lucky to be able to attend UC Santa Cruz for a degree in Environmental Studies and Biology. If you have never visited that beautiful campus, I recommend the trip to walk amongst the redwoods. After college, because of my volunteer work during the previous school year, I had a paid summer internship in S.F. Zoo’s Insect Zoo. Then, after a stint doing office temp work (my high school job experience paid off here), I worked as a technician in a cardiovascular development lab at UC San Francisco; the lab used zebrafish as a model organism. Two years later, I moved on to University of Texas at Arlington to earn a Ph.D. in Quantitative Biology. My research centers on the behavior and ecology of lizards, with a focus on desert lizards of the American west. I love traveling and working in Central and South America, bird watching, SCUBA diving, snorkeling, hiking, and reading.

Texts & Materials: All required and recommended materials are available in the campus bookstore. You may be able to find the same books (except for the lab manual!) for better prices by shopping online sellers.

1. **Loose-leaf Campbell Biology in Focus**, 3rd edition by Urry et al., ISBN 9780134895727  
   - Students who bring the book to class follow along better. Please purchase a loose-leaf copy of this text.  
   - I selected this text as the primary book for this course because it is comprehensive without excessive detail, relatively easy to read, has excellent figures, is a standard in the field, and has good online resources.  
   - You will use this book in General Biology 2, as well, so you will get a good return on your investment.  
   - You may also use the 2nd edition of this book. It should be inexpensive to purchase a used copy.  
   - You do not need the online Mastering Biology access.

2. The i>Clicker is required for this course. Any version of i>clicker 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 folks in the class understand the concepts.  
   - 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 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 lab 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.

COURSE DESCRIPTION AND OBJECTIVES

Course Requirements
Prerequisite: Grade of A or B in high school biology, or BIOL 1010. Co-requisite: You must be enrolled in an associated lab section (W 11-2, W 2-5, or F 12-3).

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.
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 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 will 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 will be regular opportunities to earn extra credit in lecture, but you will need to be present to participate.** 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 must be turned in on the day and time it is due. Under normal circumstances no extra credit will be accepted after the due date. There are typically no make-up assignments in this course.

**The last day to drop a class is September 19. The last day to apply for the CR/NC grading option is Wednesday, Nov 27, before the Thanksgiving break. To change your grading option, you will need my signature on a Registration Options Form (available online from the Enrollment Services website).**

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Possible Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
<td>300</td>
<td>30%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Group Presentation</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>125</td>
<td>12.5%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>125</td>
<td>12.5%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>125</td>
<td>12.5%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>120</td>
<td>12%</td>
</tr>
<tr>
<td>Syllabus exercise</td>
<td>5</td>
<td>0.5%</td>
</tr>
<tr>
<td>TOTAL POINTS POSSIBLE</td>
<td>1000</td>
<td>100%</td>
</tr>
</tbody>
</table>

### 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.
- **Students** are expected to **take exams** during the scheduled dates and times. If you have a legitimate excuse to miss a lecture exam, I need to know the reason, in writing, at least a week before the exam date. Arrangements for taking the exam at another time must be made at the time of the written request. If you have an emergency less than a week before an exam, you must let me know of the emergency prior to the exam time if possible. You must provide a valid, written excuse on or before the next class period after the exam date, in order to be able to take the exam at an alternate time. If the emergency lasts beyond the next class period after the exam, you must at least let me know about the situation, and you must bring a valid, written excuse as soon as you return to school. I will determine the appropriateness of taking the missed exam in this case.
- **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.
**Lecture Recording Policy:** Audio or video recording (or any other form of recording) of classes at Stanislaus State University is not permitted unless expressly allowed by the faculty member as indicated in the course syllabus or as a special accommodation (8/AS/10/FAC—Faculty Policy on Student Recording of Classes). Recordings are taken out of context of the classroom setting, and while they may document the exact words spoken, they do not fully document the exchange of information and understanding that occurred during the class session. If you have a particular reason why you would like to make an audio recording of lectures, please discuss this with me in my office.

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### Tentative Course Outline

<table>
<thead>
<tr>
<th>DATES</th>
<th>TOPICS</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 23</td>
<td>Syllabus &amp; Course Introduction</td>
<td>1</td>
</tr>
</tbody>
</table>
| Aug 26, 28, 30 | Chemistry of Life  
Carbon and Organic Material | 2, 3     |
| Sep 2       | *Labor Day Holiday - No classes all day*    | --       |
| Sep 4*, 6   | Carbon and Organic Material                 | 3        |
| Sep 9, 11, 13 | Carbon and Organic Material  
Membrane Structure and Function | 3, 5     |
| Sep 16, 18** | Membrane Structure and Function              | 5        |
| **Sep 20**  | *Midterm 1*                                 | 1-3 & 5  |
| Sep 23      | *Let’s go HYBRID - LECTURE WILL BE ONLINE*  | 5        |
| Sep 25***   | *A GROUP PRESENTATIONS - TOUR OF THE CELL*  | 4        |
| Sep 27      | *Metabolism*                                | 6        |
| Sep 30, Oct 2, 4 | Cellular Respiration                       | 7        |
| Oct 7       | Cellular Respiration                        | 7        |
| Oct 9       | Catch up and Review                         | --       |
| **Oct 11**  | *Midterm 2*                                 | 4, 5, 6, 7|
| Oct 14, 16, 18 | Photosynthesis                            | 8        |
| Oct 21***   | *B GROUP PRESENTATION - CELL LIFE CYCLE*    | 9        |
| Oct 23, 25  | Meiosis and Sexual Life Cycles              | 10       |
| Oct 28, 30  | Mendelian Genetics                          | 11       |
| Nov 1       | Chromosomal Inheritance                      | 12       |
| Nov 4, 6, 8 | Molecular Basis of Inheritance (DNA→DNA)    | 13       |
| **Nov 11**  | *Veteran’s Day Holiday - No classes all day*| --       |
| Nov 13      | Catch up and Review                          | --       |
| **Nov 15**  | *Midterm 3*                                 | 8-13     |
| Nov 18, 20, 22 | Gene Expression (DNA→RNA→Polypeptide)       | 14       |
| Nov 25***   | *C GROUP PRESENTATIONS - VIRUSES*           | 17       |
| Nov 27G     | Population Genetics                          | 21       |
| Nov 29      | *Thanksgiving Holiday - No classes all day*  | --       |
| Dec 2, 4, 6 | Descent with Modification  
Speciation and Evolution | 19, 22   |
| Dec 9       | Catch up and Review                          | All chapters |
| **Dec 11**  | *Reading Day - No More Classes*             | --       |
| **FINAL EXAM** | Monday, December 16, 8:30-10:30 am    | All chapters |

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*Click-days begin  
**Drop deadline is Sept. 19  
***Group Presentation Dates  
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*Last date to change grading option (must turn in signed form on this date)"
How you Earn your Grade in Lecture

As I complete grading for each assignment or exam, you will be able to check your score on Blackboard.

You have one week following return of any exam or assignment to meet with me to work out any reasonable changes in grading.

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. You earn your highest grade by choosing the correct answers. I know things come up, and you might miss a day or two of class; don’t worry, it will be safe to miss two days without penalty. Additionally, you can earn bonus participation points for attendance on group presentation days. Hint: put three spare batteries in your backpack in case your i>Clicker fails.

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

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

Exams

There will be three midterms and a required comprehensive final. Midterms will consist of 50 questions to be answered on a Scantron (bring your Scantron and pencil). There will also be one page (front and back) of short answer/identify a picture from the text/label-a-process questions. Questions will cover material that is associated with lecture. I encourage you to study the material more deeply that we cover in class, in order to perform well at the level of the test. Scantron questions will be valued at 80 points on each exam and short answer at 20 points.

The required comprehensive final will consist of 100 multiple choice questions and one page (back and front) of free response questions. Some questions may be the same as those used on the midterms, but others will be different.

Tips for learning the material

In my experience, many bright students are simply not challenged during high school. As a result, smart and capable people haven’t had the opportunity to develop the study skills needed for success in the university. Don’t let my first exam catch you by surprise!

This course is content-heavy, and you will not be able to cram with much success for my exams. Make your study time a daily habit.

- 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 not. Make sure performing well in lab is part of your plan for success.
- 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.
- 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 and in the posted lecture slides.
- 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.
- The Preview-Review Questions associated with each lecture chapter are your Study Guide. Be sure you can thoroughly answer each one without referring to the textbook or notes.
- 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.

**Group Presentation** – Check on Blackboard for the Grading Rubrics for this project.

To foster your confidence in exploring, discussing and sharing scientific information, you will work in a group to prepare one short, ten-minute presentation. Your main objective is to provide a memorable lesson that will help your classmates to master the material. You will need to meet outside of class times to prepare your presentation.

**Group Structure:** Groups will consist of students from the same lab section. Dr. Gerson will facilitate group formation.

**Presentation Dates and Topics:** Four groups will present on different subtopics of the main theme on each presentation day.

<table>
<thead>
<tr>
<th>Date</th>
<th>Theme</th>
<th>Group</th>
<th>Subtopic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 25</td>
<td>A Tour of the Cell Section 003 (Wed 11-2)</td>
<td>A1</td>
<td>Prokaryotic Cells (Include outside resources to answer Pre/Re Qs)</td>
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<tr>
<td></td>
<td></td>
<td>A2</td>
<td>A Tour of the Eukaryotic Cell 1 →</td>
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<td></td>
<td></td>
<td>A3</td>
<td>A Tour of the Eukaryotic Cell 2 →</td>
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<tr>
<td></td>
<td></td>
<td>A4</td>
<td>A Tour of the Eukaryotic Cell 3 →</td>
</tr>
<tr>
<td>Oct 21</td>
<td>The Life and Times of a Normal Cell Section 004 (F 12-3)</td>
<td>B1</td>
<td>Function/use/purpose of mitosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B2</td>
<td>Importance of Checkpoints in G1 and G2 of Interphase</td>
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<tr>
<td></td>
<td></td>
<td>B3</td>
<td>Mitosis: Prophase, Metaphase, Anaphase</td>
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<tr>
<td></td>
<td></td>
<td>B4</td>
<td>Mitosis: Telophase &amp; Cytokinesis &amp; compare in animals &amp; plants</td>
</tr>
<tr>
<td>Nov 25</td>
<td>Living or Not: Viruses Section 002 (Wed 2-5)</td>
<td>C1</td>
<td>Diversity of Viruses: Overview of Structures; &amp; Are viruses alive?</td>
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<tr>
<td></td>
<td></td>
<td>C2</td>
<td>The Bacteriophage Lysogenic Cycle &amp; Lytic Cycles</td>
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<tr>
<td></td>
<td></td>
<td>C3</td>
<td>Introduction to Retroviruses (example: HIV)</td>
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<tr>
<td></td>
<td></td>
<td>C4</td>
<td>Vaccines &amp; Immune Response (hint: see pp. 745-746 on vaccines)</td>
</tr>
</tbody>
</table>

**Presentation Guidelines:**

- Your goal is to provide your classmates a valuable learning opportunity.
- The presentation can be **no more than ten minutes**! You will lose points if you go over time.
- Stick to your assigned subtopic and be aware of the other subtopics in your session (so you don’t waste your time on someone else’s project).
- Your group will need to decide on roles for each member and each member **must** take part in the preparation and/or presentation of your project. Some suggested roles are: group chairperson, secretary, textbook research, internet research, illustrations/graphics, presenter, videographer, audio-visual technician. Your assigned roles are due to me one week before your presentation.
- Your presentation can be creative! You are welcome to make use of any resources we have available, including laptop, internet, document camera (overhead projector), and any materials you wish to bring with you. You can provide a straightforward presentation of the information, or you can perform a skit, song, or puppet show, you can show a video or animation produced by your group, or your can use any other creative means you can think of to share information.
- Your classmates will grade you according to the value they receive from your work, so remember that **content delivery is key**.
- Be sure to practice! If you cannot complete your lesson in ten minutes, your score will suffer!

**When your group is not presenting:**

- Be attentive and polite in support of your peers! This is a big class, and it can be intimidating to present to a large group.
- You earn one bonus participation point for attending class on group presentation days.
- You are responsible for judging the work of your peers. Your main criterion is: “**How well did the presentation help me to learn the material?**”

**Extra Credit? Yes!** Regular extra credit opportunities will arise in lecture class. You must attend class to earn these points!