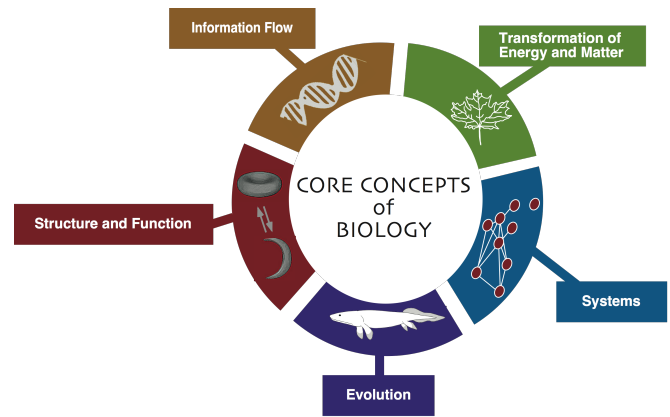


Biology 3310: Cellular and Molecular Biology

California State University, Stanislaus
Spring 2020



INSTRUCTOR:

Sarah Bissonnette, Ph.D.

Assistant Professor, Biology

Accustomed to: she/her

Email: sbissonnette@csustan.edu

Office: N264

Student Hours:

Tuesdays 11am-12pm; Wednesdays 1-2pm N264

And many many other times by appointment, please e-mail me!

****This class is supported by Supplementary Instruction (SI). SI times will be determined in the first week of class.****

COURSE CREDIT: 3.0 Units

PREREQUISITES: **CHEM 1100 AND CHEM 1110 or their equivalents**
BIOL 1050 AND BIOL1150 or their equivalents

SCHEDULE: Monday, Wednesday, Friday 11:00-11:50 am

LOCATION: Bizzini 204

WEBSITE: Stan State Blackboard site for Biol 3310-002, Spring 2020

COURSE DESCRIPTION: This course is a course in cell and molecular biology required for Stan State biology majors. Course teaching strategies will engage students as a community of biologists in the classroom, where biology concepts, investigative skills, leadership skills, and language processes integral to biology learning are emphasized. An overarching goal of the course is for students to gain insight into the nature of scientific inquiry, the process by which knowledge in biology is acquired, and of the strengths and limitations of the process and the evidence obtained. To this end, students will consider experiments and data that support our current understanding of cells and how they function. Students will gain skills in working with peers as they learn to identify their confusions, ask questions, and think critically and skeptically about cell and molecular biology. Students will also have the opportunity to improve their communication skills through numerous writing assignments and in-class activities.

Course content is designed to deepen student understanding of essential functions of cells and the structures that mediate these functions. In addition, readings and discussions about current events, scientific policies, and historical documents will provide opportunities for students to apply their knowledge and explore the applications of these biological concepts and their influence on society. This course aspires to support students in developing the interests, basic content knowledge, and skills necessary to evaluate new discoveries in cell biology and to continue to deepen their knowledge of biology throughout their lives.

MATERIALS:

- REQUIRED:
 - Essential Cell Biology, Alberts et al. ANY edition. Page numbers will be assigned from the third edition:
 - <https://www.amazon.com/Essential-Cell-Biology-Bruce-Alberts/dp/0815341296>
 - One pack of 3x5 index cards (~100, any style) – bring a few to every lecture
 - Your own iClicker (available at the Stan State Bookstore)
 - Web/E-mail access

CLASS CULTURE: Biology 3310 is a community of biologists trying to increase their understanding of the biological world. The classroom culture is designed to engage you in thinking like a biologist. This means cooperative learning and problem solving will be emphasized. Often, we will seek to understand complex topics by analyzing “case studies,” which may include reading scientific articles or discussing real-world dilemmas.

Students Should:

- Attend and actively participate as a member of the Biology 3310 community.
- In all situations display respect, tolerance, and patience when interacting with colleagues.
- Be open to learning in many different ways and trying new learning and study strategies.
- Approach me for help early and often, and provide me with feedback.
- Seek out additional information through resources like Wikipedia, YouTube, etc.
- Use text and other readings to clarify information and extend knowledge.
- Take responsibility for your own learning by staying attentive and organized.
- Not use portable electronic devices in class.
- Not use computers for non-class related activities during lecture (Social media, etc.)

GRADING: This course is designed *to promote your learning* and is customized in many ways for that purpose. I use the graded assignments and exams outlined below specifically to facilitate your understanding of biology from many different viewpoints and using many different teaching styles. In addition, these assignments (particularly in-class lecture activities and Blackboard assignments) give me highly valuable information throughout the term, allowing me to adjust the course to meet your educational needs.

Your grade will be earned through the following:

<u>Points</u>	<u>Description</u>
300	Quizzes (4x 100 points, lowest one dropped)
100	In-class practice problems (10x 10 points)
50	Homework (5x 10 points)
50	iClicker 2 points per class (once you hit 50 points, everything above that will be extra credit)
150	Final Exam
650	Total

Grade assignments will be based on the percentage of total points earned. I as the instructor do not decide your grade, but rather you as a student do the work to earn your grade.

<u>%</u>	<u>GRADE</u>	<u>GRADE POINTS</u>
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
0-59	F	0

EXTRA CREDIT: Extra credit is available: 5 points for meeting with me one-on-one OR for attending an exam review session. Additionally, extra credit points are offered on some quizzes, and for completing the COS survey. Finally, if you bring your clicker to every class and are present for the whole class period, there are 20 extra credit points available!

LATE ASSIGNMENTS: Homework will be due at 11:00 am on the day it's due, either in class or online depending on the assignment. Assignments turned in after 11:00 am will lose 1 point per day, including the day that they're due (ie, assignments turned in at 12pm on Tuesday can receive a maximum score of 9/10).

ATTENDANCE: Attendance of lecture sessions is **essential** for success in this course. Lectures often include in-class activities and discussions of the material in ways not emphasized in suggested and required readings. In addition, questions and problems practiced in lecture sessions will appear on quizzes. Positive attendance means being present at the start of class (11:00 am sharp!) and remaining present throughout class (11:50 am). Attendance will be monitored through responses to iClicker questions. You are responsible for responding to iClicker questions yourself, and you may NOT respond for any of your colleagues.

LECTURE ACTIVITIES: Participation in lecture sessions means not just being physically present, but being mentally and intellectually present as well. **Your voice matters** in large and small group discussions, and I will provide you with numerous opportunities to share your ideas. One way I will hold you accountable for lecture participation is through the use of index cards. At the beginning, middle, or end of lecture, I will present you with a question or statement that challenges your scientific and/or personal viewpoints. In addition, I will be doing several case studies in class that will require you to work with others to identify your questions about a biological problem, go find information about the case outside of class as a homework assignment, and share what you've learned with others during a following class. I hope that these in-class activities a) allow you a chance to think through your ideas, b) take the pressure off the formal testing process by accounting for a portion of your grade, and c) provide me with an idea of your understanding of the concepts we cover in class.

HOMEWORK: For you to turn knowledge into something you can use, it is important to reflect on what you know and what issues are still confusing to you. Periodically you will be required to submit a Homework assignment to me via Blackboard or in person. I will provide prompts for you to write about or respond to. Grades will be assigned for turning these journals in on time, and following the instructions. The point of these assignments is to give you practice reading scientific papers, researching topics, and writing about science thoughtfully. Each assignment will also deal with a topic that we will be talking about in class, so I want you to have thought about the topic before you get to class. Students who have taken the course before must submit brand new work.

You may not submit all or parts of a homework assignment that you have previously submitted.

iCLICKERS: iClickers will be used to allow both you and me as the instructor to understand how our community is thinking about a biological topic. You will receive points for participating in iClicker questions given during class, but I will not grade you on the correctness of your answer because I want you to be honest about how you are thinking. ***Under no circumstances can you operate anyone else's iClicker.*** Any instance of one student responding for another student will be considered and handled as a cheating incident. Either the iClicker + or 2 is fine.

IN CLASS PRACTICE PROBLEMS: There will be 10 In-Class Practice Problems throughout the semester. In class practice problems will take the first 10 min of the class that they are administered, and they will be graded. The goal of In-Class Practice Problems is to encourage everyone to study regularly, and to give everyone practice with Quiz-like questions.

QUIZZES: There are four quizzes throughout the semester. The quizzes will include a variety of question styles that require you to recall, evaluate, apply, and reflect on what you learned. These quizzes cover concepts discussed in lecture, in-class activities, and homework assignments. Questions, problems, and discussion/reflection prompts from class will appear as quiz questions. I will supply a study guide in advance of these quizzes. Since your lowest quiz score will be dropped, there will be no make-up quizzes.

FINAL EXAM: The final exam will be worth 150 points.

EMERGENCIES: If you have an unforeseeable emergency that comes up on the day of an In-Class Practice Problem, the Quiz, or the Final Exam, PLEASE notify me via email as soon as possible. I'll do my very best to accommodate you.

COMPUTERS: This is an electronically supported course. You must have easy access to a computer and the internet in order to be successful in this course. A list of computer labs on campus can be found at: <https://www.csustan.edu/oit/computer-labs>.

RESOURCES: BIOL3310 is an intellectually demanding class. Because of this I want to make sure that you know about all of the resources that are available to you to help you be successful.

- **The slides and AUDIO recordings of each class are posted to blackboard ASAP after each class.**
- **Supplementary Instruction happens for 50 minutes three times per week (I urge you to attend at least once a week from the first week of class.)**
- **Take advantage of Sarah's student hours**
- **Make an appointment to talk with Sarah one-on-one**
- **Start a study group that meets in person or over zoom/facetime**

STATEMENT ON PLAGIARISM AND CHEATING: Students are expected to maintain academic integrity in all work pursued at Stanislaus State University. Cheating on tests may, at the discretion of the instructor, result in the automatic disqualification of the test and the student receiving zero points for that test. Cell phone use (text messaging included) during a test for *any* reason (personal or otherwise) is considered cheating. Plagiarism, defined as either **1) direct copying or loose paraphrasing of text from a published work or from an online source without appropriate referencing, or 2) use of another student's work or ideas without appropriate attribution**, will result in zero points earned for that assignment.

DEPARTMENTAL AND UNIVERSITY DEADLINES:

February 21st, 2020 – Last day to drop classes without transcript notation.

University Services and Support

As a Stan State student, all of these services are available to you, free of charge (except certain medical appointments and procedures). Please visit their web pages and stop by their offices to learn more about the services they provide. Many of my former students have found these offices and programs to be very helpful.

The Warrior Food Pantry

Student Services Building Room 127/ (209) 667-3561/ <https://www.csustan.edu/warrior-food-pantry>

The Warrior Food Pantry exists to provide non-perishable food items and toiletries at no cost to Stan State students in need. Students may collect up to 10 items per week. The pantry aims to decrease the impact that food insecurities have on the academic success of students, as well as helps to alleviate hunger within our campus community. Open M-F 9am-4pm

Student Health Center

Health Center Building / 209-667-3396 / www.csustan.edu/health-center

Medical care, health education, disease prevention, laboratory testing, physicals, women's and reproductive health, flu shots, immunizations.

Disability Resource Services

Library Annex 24 / 209-667-3159 / www.csustan.edu/drs

Supports students and arranges accommodations for students with disabilities, including disabilities related to learning, vision, mobility, hearing, autism, or chronic or temporary health factors.

Psychological Counseling Services

Student Services Annex 1 / 209-667-3381 / www.csustan.edu/counseling

Confidential individual personal counseling and group/wellness workshops to help students deal with stress, anxiety, depression, grief, relationships.

Diversity Center

Library Annex 6 & 7 / 209-667-3511 / www.csustan.edu/diversity-center

Workshops, student space, reading nook, complimentary coffee and tea, social justice library, conference room space.

Undocumented Student Services

Library Annex 6 / 209-667-3519 / www.csustan.edu/dreamers

Walk-in advising, workshops, legal services, DACA renewal, scholarships, peer support, family and community engagement.

Academic Success Center

MSR 210 / 209-667-3700 / www.csustan.edu/ASC

Drop-in advising for general education, university requirements, undeclared majors, academic probation, and California Promise.

Learning Commons

Library Annex 14 / 209-667-3642 / www.csustan.edu/learning-commons

Tutoring (walk-in and regular appointments), supplemental instruction, WPST, writing center.

Career and Professional Development

MSR 230 / 209-667-3661 / www.csustan.edu/career

Career coaching, workshops, resume building, business attire, and more.

Class Topic Sequence

This topic sequence is approximate and may change. Additional reading and homework assignments will be given out in class.

Week #	Topics
1	Introduction to the class, Parts of a cell, endosymbiosis,
2	Chemistry, functional groups, hydrophobic effect, bonds, 2nd law of thermodynamics, amino acids, protein folding
3	protein purification in vitro, protein production and folding in vivo
4	Protein function and membranes
5	Protein Localization and Secretion
6	Transport across cell membranes
7	Action Potentials, Learning, Drugs and the Brain
8	Cell Signaling
9	Cell Signaling
10	The cytoskeleton
11	The cell cycle
12	The cell cycle and cancer
13	Apoptosis and cancer
14	Cancer chemotherapy
15	Metabolism and cancer

Sp 2020 Biol 3310-002: Cell and Molecular Biology, MWF 11:00-11:50am			
M, 1/27 Class 1		M, 3/23- F 3/27	SPRING BREAK
W, 1/29 Class 2		M, 3/30 Class 25	
F, 1/31 Class 3	In-Class Practice Problems-1	W, 4/1 Class 26	
M, 2/3 Class 4		F, 4/3 Class 27	Quiz 3
W, 2/5 Class 5	Homework-1 Due	M, 4/6 Class 28	
F, 2/7 Class 6	In-Class Practice Problems-2	W, 4/8 Class 29	
M, 2/10 Class 7		F, 4/10 Class 30	In-Class Practice Problems-7
W, 2/12 Class 8		M, 4/13 Class 31	
F, 2/14 Class 9	Quiz 1	W, 4/15 Class 32	
M, 2/17 Class 10		F, 4/17 Class 33	In-Class Practice Problems-8
W, 2/19 Class 11		M, 4/20 Class 34	
F, 2/21 Class 12	In-Class Practice Problems-3	W, 4/22 Class 35	
M, 2/24 Class 13		F, 4/24 Class 36	Quiz 4
W, 2/26 Class 14		M, 4/27 Class 37	
F, 2/28 Class 15	In-Class Practice Problems-4	W, 4/29 Class 38	
M, 3/2 Class 16		F, 5/1 Class 39	In-Class Practice Problems-9
W, 3/4 Class 17		M, 5/4 Class 40	
F, 3/6 Class 18	Quiz 2	W, 5/6 Class 41	
M, 3/9 Class 19		F, 5/8 Class 42	
W, 3/11 Class 20		M, 5/11 Class 43	
F, 3/13 Class 21	In-Class Practice Problems-5	W, 5/13 Class 44	In-Class Practice Problems-10
M, 3/16 Class 22		F, 5/15 Class 45	
W, 3/18 Class 23		M, 5/18 11:15am- 1:15pm	<u>Final Exam, cumulative</u>
F, 3/20 Class 24	In-Class Practice Problems-6		