

General Biology II: Organisms Summer 2019 Syllabus

I. Course Description

The purpose of this class is to invite students to join the scientific community in our quest to use experimental data to increase our understanding of how life works. This course is about plant and animal physiology and development. We study the constraints set by geometry, the environment, and natural laws that dictate what organisms must accomplish in order to survive and reproduce. We study the forces and machinery that allow movement across membranes, enzyme regulation and kinetics, differential gene expression, and mechanisms of cellular computation and perception. We generate models of systems that organisms use to create homeostasis, which is an internal environment in which their individual cells can participate optimally in the process of meeting the challenges of life on earth. We also study how cells manage to take on specific and unique roles in the organism, which is the study of developmental biology.

Students taking the course will learn how to carry out epistatic analyses of various biological pathways and to interpret and generate complex graphical representations of data. Students propose, design, and conduct experiments on the physiology of long-range transport in animals. They analyze the data they generate and write a scientific paper describing their work. This course is part of the introductory biology sequence and has as a prerequisite Bi211. This course is itself a prerequisite for Biology 214 (but not 213) and for the introductory human physiology sequence.

II. Instructors

Instructor: Dr. Hannah Bishop

email: hibishop@uoregon.edu

Office Hours: Wednesday 11-12p and by appointment
KLA 13

GTF: Felipe Campos Cerda

email: fcamposc@uoregon.edu

Office Hours: Tuesday 11-12p and by appointment
KLA 13

TA: Tony Munoz

email: tmunoz@uoregon.edu

Office Hours:, KLA 13

TA: McKenna Vaughn

email: mvaughn3@uoregon.edu

Office Hours: Monday 11-12p, KLA 13

III. Course Details

a. Lecture and iClicker Participation (MTWR: 9:00-10:50)

Clickers will be used in almost every class to encourage participation and to provide valuable feedback to instructors and students. Each student is expected to purchase a clicker for use in this class. You should register your clicker on the Canvas site before the first day of class.

b. Lab Activities (MW)

The lab is a smaller group led by a graduate student that meets *twice* a week for 110 minutes. Throughout the term you will be learning how to write a scientific paper and using those skills to design and implement your own research project. There is no lab packet, as everything will be provided online, and computers will be provided every lab period. **Attendance is mandatory. Missing multiple labs without an acceptable excuse will result in a failing grade for the course.**

c. Required Supplies

iClicker (available at the Duck Store).

Textbook: *Biological Science* by Freeman 4th, 5th or 6th edition.

The text should be used as a general reference throughout the three quarters of General Biology. Pertinent chapters are indicated in the reading schedule posted to Canvas. The readings include background material useful to prepare you for lecture and for studying for exams.

d. Assignments

Assigned Readings: We will make available a set of assigned and a set of optional readings on our website. Our assigned articles are designed to provide examples of the science methodology that leads to an understanding of the field, and provide discussion of topics that may not make it into textbooks for years to come.

Homework Assignments: There will be two sets (one for the first half of class, due before the midterm, and one for the second half of class, due before the final) of three online homework assignments to be submitted on canvas. You are only *required* to submit one from each set, but can complete all three for extra practice. We will use your highest score of the three for your homework grade.

Exams and grading: There will be one midterm and one final exam. The exams will cover material from all aspects of the course including lectures, labs and readings.

EXAMS CANNOT BE MADE UP. EVERYONE IS REQUIRED TO TAKE THE FINAL EXAM. BE CAREFUL WHEN MAKING TRAVEL PLANS AS THE FINAL IS ON THURSDAY AUGUST 15TH at 9am AND THERE WILL BE NO EARLY EXAMS AND NO MAKE-UP EXAMS.

Exam Re-grade Policy: If upon receiving your exam back and reading the posted key, you think that you should have received more credit for an answer, submit your exam to your GTF, along with a **WRITTEN EXPLANATION** of why you think your answer is correct, within **ONE WEEK** of getting your exam back. If a simple addition error occurred, you may just take it to a GTF without an explanation.

e. Grading

Category	% Grade
Clickers, Class Activities	10
Labs/Writing Tutorials	20
Homework	10
Midterm	30
Final	30

f. Office Hours

The single biggest problem students have in general biology is solving the kinds of problems presented in homework problems and exams. These are similar to the kinds of questions that biologists ask; many can't be solved by memorization of facts. Although attendance is not required, we strongly encourage you to regularly attend the office hours of the instructor, GTFs and undergraduate TAs.

g. Review Sessions

Undergraduate TAs often volunteer to organize review sessions to help students prepare for quizzes and exams. *Review sessions are much more likely to be offered when office hours and biology tutoring hours are well attended.* We get access to large classrooms for these events. Review sessions are run on a question and answer basis.

h. Classroom Etiquette

This syllabus is, in effect, an agreement about how all of us will carry out our duties and conduct ourselves this quarter. You should read this carefully and talk to us about it as soon as possible if you are uneasy with parts of this syllabus. We will work hard to make this course valuable to your learning. We welcome suggestions from you at any time about things you think could be done to improve the course. In return, we ask that you arrive at lab and lecture on time and stay until class is over without making unnecessary noise that could distract your classmates.

The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability related barriers to your participation. You are also encouraged to contact the Accessible Education Center (formerly Disability Services) in 164 Oregon Hall at 346-1155 or uoacc@uoregon.edu.

We all have crises now and then. If you are having a problem that interferes with your ability to do the work in this class, please tell us about it as soon as you can. We are willing to give grades of incomplete or to make some kinds of special arrangements when the need is real **and** when you have done your best to deal with the situation and let us know about it in a timely manner.

i. **Email Etiquette**

Please include “Bi212” in the subject line, so your email can be attended to in time. We will try to answer your email in a timely manner; however, we do not always check our email in the evenings or during weekends.

j. **Policy on Missed Assignments**

All assignments must be turned in on time. There will be no make-up assignments or make-up exams.

k. **Plagiarism and Cheating**

Academic misconduct will not be tolerated. You are expected to do your own work on all assignments and exams. Using another student’s iClicker during class constitutes cheating. You are encouraged to discuss ideas with other students and study together, but do not copy someone else’s work or allow anyone to copy yours. All students are expected to conform to the Student Conduct Code. Please note that Instructors are required to file a written report of any academic misconduct with the Director of Student Conduct and Community Standards. Academic dishonesty includes cheating, plagiarizing (taking credit for the work of others) or knowingly supplying false information -- it is a serious offense. Please don’t be tempted to commit any of these offenses.

IV. Class Schedule and Reading Assignments

Week	Day	Topic and Reading Assignments
1 Basic Cellular Mechanics	Mon	1. Introduction to class and cell size (p821-829) 2. Movement through membranes (p130-138, p877)
	Tue	3. Homeostasis (p829-830) 4. Metabolic thermogenesis (p831-833)
	Wed	5. Gene constructs (Saper paper) 6. Gene regulation (Saper paper)
	Thu	7. Enzyme kinetics (p182-184, p194-196 online videos) 8. Intro to blood pressure/student projects (No reading)
2 Transport of Nutrients	Mon	9. Mammalian Circulation (p888-890, p895-896) 10. Heart rate (p892-895)
	Tue	11. Blood and capillary function (p884-888) 12. Hemoglobin, cooperativity, and Icefish (No reading)
	Wed	13. Plant anatomy and phloem loading (p740-744) 14. Water potential and Transpiration (p727-738, p810-812)
	Thu	15. Stomatal opening/closing (p781-783) 16. Serna Paper and epistatic analysis (Serna paper)
3 Maintaining Homeostasis	Mon	MIDTERM EXAM 9AM
	Tue	17. Plant nutrition (skim chapter 36) 18. Animal nutrition (p859-868, also Fig 41.1)
	Wed	19. Digestion (p859-868) 20. Brush border cells and cholera/cystic fibrosis (No reading)
	Thu	21. Blood sugar regulation (869-871) 22. Body fat regulation (No reading)
4 Development and Neurobiology	Mon	23. Animal fertilization (p991-993, p419-420) 24. Animal embryonic development (p994-996)
	Tue	25. The Nervous System: Signaling within neurons (p900-907) 26. The Nervous System: Signaling between neurons (p908-912)
	Wed	27. Plant development (p810-813) 28. Review
	Thu	FINAL EXAM 9 AM