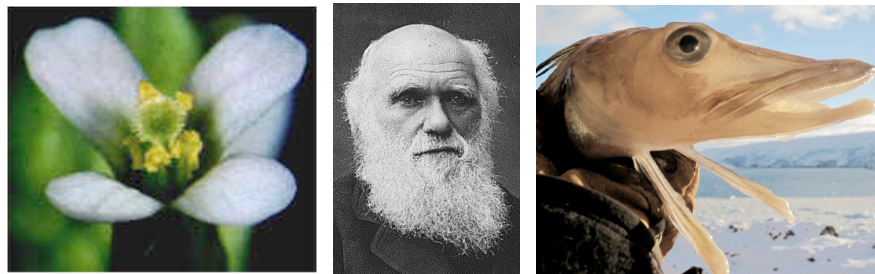
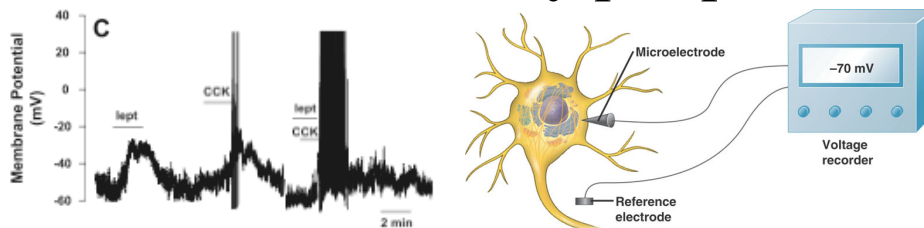


# Bi212:Organisms

A CLASS COVERING PLANT & ANIMAL  
PHYSIOLOGY AND DEVELOPMENT



with an evolutionary perspective



and a focus on the experimental data we use to build a scientific worldview

## SYLLABUS FOR SPRING 2023

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# Bi 212 General Biology II: Organisms

## Syllabus for Spring Quarter 2023

For more information see our

**Canvas based Website**

Instructor: Mark Carrier, [mcarrier@uoregon.edu](mailto:mcarrier@uoregon.edu)

OFFICE: 160 WIL Klamath

### Bi 212 Schedule Spring 2023

Week	Lectures			Lab/ Discussion
	Date	Topics, Quizzes and Exams	Due dates	
<b>1</b>	4/3	Movement through membranes	<b>1</b>	Flow through Membranes & writing tutorial 1
	3/5	Enzyme Kinetics	<b>2</b>	
	4/7	Temperature Regulation and BMR	<b>3</b>	
<b>2</b>	4/10	Size and metabolism in animals	<b>4</b>	Enzymes
	4/12	As above, then Plant Structure and Growth	<b>5</b>	
	4/14	Plant growth and Development	<b>6</b>	
<b>3</b>	4/17	Transporting materials in plants	<b>7</b>	<b>Homework #1</b> <b>due Wednesday</b>
	4/19	Transporting materials in plants	<b>8</b>	
	4/21	<b>Quiz 1</b> ; Movement across membranes/ $\Psi_w$	<b>9</b>	
<b>4</b>	4/24	Transporting materials in Animals	<b>10</b>	Blood pressure and writing tutorial 2
	4/26	Transporting materials in animals	<b>11</b>	
	4/28	Transporting materials in animals	<b>12</b>	
<b>5</b>	5/1	Transporting materials in animals	<b>13</b>	<b>Homework #2</b> <b>due Wednesday</b>
	5/3	Obtaining energy and nutrients in plants	<b>14</b>	
	<b>5/5</b>	<b>Midterm 1</b>		
<b>6</b>	5/8	Obtaining energy and nutrients in animals	<b>15</b>	Data Analysis and writing tutorial 3
	5/10	Obtaining energy and nutrients in animals	<b>16</b>	
	5/12	Animal nutrient homeostasis	<b>17</b>	
<b>7</b>	5/15	Animal nutrient homeostasis	<b>18</b>	<b>Homework #3</b> <b>due Wednesday</b>
	5/17	Plants and light	<b>19</b>	
	<b>5/19</b>	<b>Quiz 2</b> / Animal nutrient homeostasis	<b>20</b>	
<b>8</b>	5/22	Auxin	<b>21</b>	Student Investigation: data collection
	5/24	Plant development	<b>22</b>	
	5/26	Flowering	<b>23</b>	
<b>9</b>	5/29	<b>HOLIDAY, NO CLASSES</b>		<b>Homework #4</b> <b>due Wednesday</b>
	5/31	Animal development	<b>24</b>	
	<b>6/2</b>	<b>Midterm 2</b>		
<b>10</b>	6/5	Animal development /Nervous system	<b>25</b>	<b>FINAL PAPER</b> <b>DUE MONDAY AT</b> <b>2 PM !</b>
	6/7	The nervous system	<b>26</b>	
	6/9	The nervous system	<b>27</b>	
<b>Exam Week</b>	<b>6/14</b>	<b>Final Exam Wednesday June 14th 10:15</b>		

**This schedule is subject to change upon the discretion of the instructor.**  
*but it probably won't.*

## **Bi212: Organisms Course Overview**

Bi212: Organisms is the second course in the General Biology Sequence. It is a 5-credit course taught in the Winter and Spring terms and during the second summer term of every academic year. Mark Carrier is the course instructor, and each term a set of graduate student Lab Instructors teach the course with him.

### BI212 in the context of the curriculum

Completion of Bi221 with a C- or better is the prerequisite for enrolling in Bi212

Bi212 is a prerequisite for Bi224 (but not for Bi223) and for most upper-division biology classes. It is also a prerequisite for the introductory HPHY sequence, and to satisfy the latter requirement a grade of C or better is required.

### Course Format

Bi212 is an in-person course with 3 hours of lecture and 2 hours of laboratory per week. The course format is a hybrid of the “flipped classroom” teaching format, which means that the content of the course is presented both in class and through video and textual resources provided on the course website. The “Lecture” component of the class includes both instructor presentation of content and time dedicated to student content processing and problem solving. (see pages 8-9)

### What we learn about

In the most general terms, Bi212 students learn about life at the organizational scale of individual organisms. Our focus is on plant and animal biology, and the central concepts that include the challenges and constraints shared by all organisms, and the biological tools living things deploy to thrive in the environments in which they dwell. We cover the fundamental processes of developmental biology and physiology. (See the topics covered details on page 2)

### Course Materials

Bi212 is for most students the first class in which the content is presented through published scientific literature rather than a textbook. Everything you need to read is provided in the course website. You will need to acquire an iClicker, but almost everyone will have one from prerequisite courses they have taken and will need it again in the courses that typically come after this one. (see course materials requirements and location on page 5)

### Expectations

This is a challenging course with an overall goal of students joining the scientific community by carrying out the same sorts of tasks that professional scientists carry out and solving problems and asking questions using the same approaches that scientists employ. This is process that requires practice, and all our tasks are designed with that in mind. You will find a detailed list of assignments and of assessments elsewhere in this document. Typically, this course is one in which lifelong friendships are forged with classmates, and the class is designed to support that process. (Detailed class goals and objectives are on page 7)

*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 in 360 Oregon Hall at 541-346-1155 or email: [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu).*

## Course Materials and Participation requirements

### Required materials

**You will need to purchase an iClicker (*Personal Response Systems*) available at the UO Duckstore.**

**All other resources will be available online through the course Canvas site.**

There is no mandatory textbook or course packet. I may generate a course packet if enough students would prefer purchasing some documents like lab protocols and worksheets to make it economical

### Technological Requirements

This course requires that you use the Canvas website.

Log into [canvas.uoregon.edu](https://canvas.uoregon.edu) using your DuckID to access our class. If you have questions about accessing and using Canvas, visit [the Canvas support page](#). Canvas and Technology Support also is available by phone or live chat:

Monday–Sunday | 6 a.m.–12 a.m.

[541-346-4357](tel:541-346-4357) | [livehelp.uoregon.edu](https://livehelp.uoregon.edu)

If you face Internet access challenges: computer labs are open for students at the Eugene campus.

### Required Participation

I do not take attendance in lecture but a significant number of course points are earned during lectures through clickers and in-class assignments.

You must attend labs. Attendance is part of the lab grading evaluation process.

You are required to take quizzes and exams during class time, and to complete assignments using the Canvas website.

You are not required to attend office hours, homework sessions or reviews – but I believe these will be of great value to you if you do choose to participate.

Because University policy states that instructors shall not ask for reasons for absences and shall not distinguish between “excused” and “unexcused” absences since there is no equitable way to confirm the veracity of student-provided reasons or documentation outside the university context. Course absence policies should be reason-neutral. For this course missing a small number of individual classes does not have a significant impact on your grade – but all quizzes and exams must be taken in class on assigned days. If you unavoidably miss a quiz or exam I can overweight the final exam as an opportunity for you to not lose points.

## **Student Engagement Summary (or the hours you'll spend on Bi212)**

Students are expected to attend three classes a week plus a 2 hour lab.

Outside of classroom attendance, students should expect to spend:

Approximately 2 hours/week reading research papers with associated reading guides

Approximately 5 hours/week completing assignments deployed on Canvas

There will be two quizzes, two exams, and a final exam. To perform well on these tests we expect students will carry out the reading and Canvas-quiz assignments with a thoroughness that constitutes a process of studying. The course instructor will provide "lecture notes" for every class meeting and using these to work through the problem sets listed above is considered part of the expected use of time.

The term research project, which we call the Student Investigation Project, will include a paper formatted as a publication submission (5-12 pages) and will require you to carry out literature research, carry out of physical experiments and carry out statistical analysis of your data, write a single page research proposal, write drafts of the final paper as well as the final paper, all of which will probably require about 36 hours outside of lab time over the course of the term.

### **Reading research papers**

Over the course of the term students will read 5 research paper packets. These packets include a paper or papers published in scientific journals. We include research papers and review articles, and each packet includes a reading guide generated by the teaching staff to help you focus your reading and to ensure you are reading the papers with an appropriate level of comprehension.

Every term we switch out these reading packets so that we can make room for new and exciting work or switch focus to cover a newsworthy topic at the level of academic research.

For the upcoming term we will include:

Animal Temperature regulation Reading packet

This reading includes 3 pages of teaching staff generated content, a 2-page overview article, and a 4-page research article.

Transpiration reading packet

This reading includes 2 pages of teaching staff generated content, a 2-page overview article, and a 9-page research article.

Digestion reading packet

This reading on fructose digestion includes 2 pages of teaching staff generated content a 3 page preview article and a 15-page research article (lots of big pictures though 😊)

Cholesterol Homeostasis Packet

This reading includes 4 pages of teaching staff generated content, and a 9 page research/review hybrid article describing Nobel Prize work of the authors.

Fly development Packet

This reading includes classic paper spanning the disciplines of molecular biology and developmental biology. This Instructor-annotated version is a ten-page document.

**Reading primary literature is a difficult task. The instructor and several undergraduates helping to teach the class have generated videos to help you with these papers. You'll find them on Canvas.**

# Detailed Course Overview

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 plants or 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 Bi221. This course is itself a prerequisite for Biology 224 (but not 223) and for the introductory human physiology sequence.

## Course Prerequisites

The prerequisites for Bi 212 are C-, P, or better in Bi 211 and one term of Chemistry (111 or higher).

## Bi211-214 Sequence Goals

There are three major goals for the Bi211-Bi214 sequence.

**Concepts** The diversity of organisms on earth is awe inspiring, but so too is the commonality of all life. We will focus the course on a reasonably small set of concepts that will help us understand how all organisms work.

To succeed in this course, students will need to demonstrate a working understanding of these major concepts, and be prepared to apply their understanding to novel situations as well as to demonstrate comprehension of these concepts in the context of examples we discuss in lecture.

**Skills** It is important for all citizens to be scientifically literate, whether or not they are in a science profession. Part of science literacy is the ability to find, evaluate, and communicate or act on scientific information and issues. We will practice these skills in this course. We take a quantitative approach to the study of organisms, and the skills practiced include making sense of scientific data, evaluating experimental design, understanding and generating written and graphic representation of scientific data

**Science as a process:** We think that it is important for all people, not just professional scientists, to understand how science works. To learn to be a better scientist you will read scientific papers and discuss not only the findings, but also how science is conducted. You will practice scientific methodology by learning to test hypotheses (even in lecture), doing controlled experiments, and evaluating observational studies. The focus of this term will be experimental design, and how we obtain evidence to test a hypothesis.

## **Bi212 Course Goal**

Study the commonality of mechanisms used by plants and animals to meet the challenges of aquatic and terrestrial environments so we may derive or reveal the basic principles of physiology that apply to all organisms. Students will join the scientific community by participating in the principal activities of scientists.

## **Bi212 Course objectives**

Students will:

...learn to use primary literature sources to obtain specific information that they can use to *generate models* of biological systems

...learn to *interpret* and *generate* complex graphical representations of data

...study several established models of the mechanisms used to maintain such aspects of organismal homeostasis as temperature regulation, metabolic rate regulation, blood flow regulation and plant gas exchange regulation to establish a pattern of what these processes have in common; to enable them to then *predict* how other aspects of homeostasis will be accomplished.

...learn to use single and double mutant phenotype data to *carry out epistatic analyses* and *generate models* of how physiological regulatory systems operate.

...learn and apply basic principles of enzyme kinetics to *predict* how the regulation of enzymes is used to maintain homeostasis in each of the covered physiological systems, and *identify* the types of regulation being used on the basis of experimental results.

...*Study* the regulation of metabolic processes in relation to all aspects of physiology to solidify students understanding of energy flow as a basic principle of life.

...Study the role of differential gene expression and developmental genetic pathways to *make or critique predictions* about how cells take on specific roles in multicellular organisms.

...Students investigate specific results of the experimental use of genetic constructs to alter or reveal gene expression patterns in plants and animals, and use this training to *make predictions* about the most likely outcome of experiments in which other constructs are used.

...learn to *generate hypotheses, carry out and modify experimental protocols, collect data, carry out statistical analyses, and generate papers* formatted and organized to be appropriate for a typical scientific journal.

...apply concepts of equilibrium potential and driving force to a variety of physiological systems



## Bi212 Course Format

**Class time** (Monday, Wednesday and Friday, 11am to 11:50 am in WIL 100)

You should be familiar with the assigned readings before coming to lecture. I ask lots of clicker questions and I typically encourage students to work together to answer them.

Exams and quizzes are given during lecture hours except for the final exam. Sometimes we use more than just the lecture hall for exams.

*Clickers (Personal Response Systems)* 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 course Canvas site. (If you've already registered your clicker *this term*, for another class, then you don't need to register it again.) Questions during lecture that require clickers will be multiple choice.

This term the final will be given on **Wednesday of finals week, June 14<sup>th</sup>, 2023 at 10:15.**

Our class time on days not dedicated to tests will include instructor and student-teacher guided problem-solving work in smaller groups. During class you will hear about breakthroughs in research that occur during the term and get very relevant practice making sense of the figures, diagrams and graphs scientists use to share information with the scientific community.

**Lab/Discussion activities** (students register for particular times)

The lab/discussion is a smaller group that meets once a week for 110 minutes at times that you register for to register for the course. The focus of labs will be to investigate the process of hypothesis driven science. Labs will be devoted to designing, conducting, analyzing, and presenting experiments in physiology. See the section on Student Investigation Project for a more detailed explanation. Each laboratory exercise is introduced by a **Pre-lab**. The pre-lab assignment is **due on Tuesday** just before midnight. You are asked to read the lab before **attending the lab session for which you registered**. The **lab assignments** you will work on with your section are **due in lab or sometimes Thursdays** just before midnight. The Pre-lab will introduce you to the topic to be covered in lab and help focus your thinking so that you will get more out of the laboratory. **We have labs in ESSL 112 this term.**

**HW/Problem Solving Sessions** (several sections to be scheduled during the term)

The single biggest problem students have in general biology is solving the kinds or 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. In the problem solving sessions, we will go over homework problems and discuss ways to approach these problems. Although attendance is not required, we strongly encourage you to attend these sessions on a regular basis, or to regularly attend the office hours of one of the GEs or tutoring session of one of the Biology Tutors.

**Homework Assignments** (due Wednesdays at midnight of weeks 3,5,7 and 9)

There will be four homework assignments during the quarter. The homework will help you to learn the material from your readings, lectures and labs that we think is important and thus may be included on the exams. Homework assignments will have a Canvas based, computerized version that will be the graded form of the assignments. The PDF version is what you should use to do the homework yourself, because if you do you will have generated an excellent quiz and exam study tool. I will hold HW sessions to help

you understand these problems and using this resource will almost certainly be worth your while. Solutions to the homework will be posted on the web just after the due date, so **late homework will not be accepted**.

You must do your own work on homework. Copied homework will be treated as academic dishonesty. It's not smart to cheat on homework anyway, the homework is there because if you can figure out these answers you'll do well on tests.

## Office and Tutor hours

**Review Sessions** (scheduled during the term)

Graduate students and Undergraduate Biology Tutors (BTUs) 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*. The course instructor also often conducts review sessions during the week of an exam. We get access to large classrooms for these events. Review sessions are run on a question-and-answer basis. No new information is presented exclusively at review sessions. GEs and BTUs who participate will not have seen the upcoming quiz or exam.

**Office Hours:**

The number of office hours offered for this class is very large. The course instructor alone offers around **16** office hours/week in addition to HW problem solving sessions. PLEASE USE THEM! TAs offer many more. See Canvas for the schedule of times and locations.

**Readings**

**Any recent biology textbook would be an acceptable source of background information for Bi212, but I do not assign a textbook. I do provide a list of pages relevant to our class topics for the textbook often used in Bi221 and Bi223.**

**In the most recent term of Bi212 a free online text was used. It doesn't cover Bi212 course content at the depth required for our class, but it provides an excellent background for some topics.**

**I am not sure if I will create a packet in the upcoming term**

Course Packet This packet contains many of the handouts you will need during the quarter including Lecture worksheets, pre-lectures, lab handouts, the Student Investigation handout, and homework assignments. You should bring the packet with you to lab section. The packet will also be available on Canvas.

**Articles:**

We will make available a set of assigned and a set of optional readings on our website. Any textbook provides plenty of information and covers a wider range of topics than we cover in all four semesters of this biology sequence. Textbooks in general fail to provide an idea of the evidence supporting the models we teach for how biological systems work, and the processes that lead to our understanding of how things work. They tend to simplify too much. Our assigned articles are designed to provide examples of the science methodology that leads to an understanding of the field, and to offer up to the minute coverage of topics that may not make it into textbooks for years to come.

## Grading

Course Component	Percent of Grade
Pre-laboratory Assignments	3
In Laboratory Activities	4
Homework assignments (4)	10
Clickers, in class activities & "self-tests"	16
Exams	55
• Midterm (2)	25
• Quizzes (2)	10
• Final Exam	20
Project	12
• proposal	2
• paper	8
• presentation	2

**Attendance at lab is mandatory. Missing multiple labs or your presentation without an acceptable excuse will result in a failing grade for the course.**

A+: Quality of student's performance significantly exceeds all requirements and expectations required for an A grade.

A: Quality of performance is outstanding relative to that required to meet course requirements; demonstrates mastery of course content at the highest level.

B: Quality of performance is significantly above that required to meet course requirements; demonstrates mastery of course content.

C: Quality of performance meets the course requirements in every respect; demonstrates adequate understanding of course content.

D: Quality of performance is at the minimal level necessary to pass the course, but does not fully meet the course requirements; demonstrates a marginal understanding of course content.

F: Quality of performance in the course is unacceptable and does not meet the course requirements; demonstrates an inadequate understanding of course content.

**Homework Assignments** There will be four homework assignments during the quarter. The homework will help you to learn the material from your readings, lectures and labs that we think is important and thus may be included on the exams. Homework assignments will have a Canvas based, computerized version that will be the graded form of the assignments. Paper based Homework will be used only to help you complete the Canvas assignment. I will hold HW sessions to help you understand these problems, and using this resource will almost certainly be worth your while. Solutions to the homework will be posted on the web by the afternoon of the due-date, so **late homework will not be accepted.**

You must do your own work on homework. Copied homework will be treated as academic dishonesty. It's not smart to cheat on homework anyway, the homework is there because if you can figure out these answers you'll do well on tests.

**Laboratory activities** Lab worksheets, either paper or electronic, will be turned in at the end of some labs. You will receive full credit for the laboratory activity reports if you attend lab and pass these in after a BULA or GE has checked them for you. Labs **cannot** be made up because they involve extensive setup of materials. If you miss a lab because of an illness, call or email your GE as soon as possible to see if you can attend another lab section. Missing labs without an instructor verified explanation may cost you additional course points. Two hour lab sections are **Esslinger 112**

**Student Investigation Project** You will conduct experiments on circulation in humans (blood pressure) and plants (transpiration). Your instructors have designed these experiments, and everyone in the class will collect data that will be pooled for analysis. In the 5th week, you will choose one of these systems to use for your investigation and you will prepare a proposal with 2 or 3 other students in your lab. Each group will carry out their investigation during the 7th and 8th week of the term and then communicate their findings in a paper and oral presentation. The project, worth 15% of your grade, consists of three parts: proposal (4%, group grade), a paper written by each individual (8%, individual grade), and a presentation (3%, group grade). Papers will be due as per the syllabus; late papers will not be accepted. Failure to write a paper will result in failing the class. The experiments you conduct will be of your own design. You will generate the protocol and design the control and experimental conditions. Each student must write his or her own paper. **You may not write them together.** All experiments are subject to the approval of the instructor. **You may not submit a paper you have submitted in a previous term.**

**Investigation Paper:** Once again, different papers are to be written by each student. You may not work together writing the paper. You are required to submit your paper to *Vericite*, located on the course Canvas site. *Vericite* checks your work for originality by checking it against published work and previous work submitted by Bi212 students.

**Pop Quizzes:** Unannounced quizzes will be given during some labs. These quizzes will cover material in the pre-lab and lab write-ups.

**Exams and grading:** There will be three exams (two midterms and a comprehensive final) and two quizzes. The exams will cover material from all aspects of the course including lectures, labs and readings. Exams will probe a deep understanding of the concepts and principles discussed, and an ability to apply the concepts to novel situations. **EXAMS CANNOT BE MADE UP. EVERYONE IS REQUIRED TO TAKE THE FINAL EXAM. BE CAREFUL WHEN MAKING TRAVEL PLANS AS THE FINAL IS ON WEDNESDAY JUNE 14<sup>TH</sup> AND THERE WILL BE NO EARLY EXAMS AND NO MAKE-UP EXAMS.**

Exams are graded by Graduate Teaching Fellows under the supervision of the faculty. To promote consistency, one person grades the same question on all exams. 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 GE, along with a **WRITTEN EXPLANATION** of why you think your answer is correct, within **ONE WEEK** of getting your exam back. Your entire exam will then be re-graded by the people who originally graded it and by the faculty member and your new score will be used. If a simple addition error occurred, you may just take it to a GE.

**In and after class assignments:** We will use Canvas and iClickers to pose questions that can be graded by computer and provide you with pretty much instant grading and feedback as to your understanding of the material as it is presented.

*Clickers (Personal Response Systems) **THESE ARE PART OF YOUR GRADE***

Clickers will be used in almost every class to encourage participation, monitor attendance, and to provide valuable feedback to instructors and students. Each student is expected to purchase a clicker for use in this class. We will register the clickers during lab in week 1 so be sure to have yours with you at that time. Questions during lecture that require clickers will most likely be multiple choice or true/false. Points will be earned for offering a response. More points will be awarded if the response is correct.

*Post-lecture “Self Tests” on Canvas **THESE ARE PART OF YOUR GRADE***

Questions relevant to material covered in lecture will be posted at the end of each class. Canvas will grade them, provide the correct answers, and record your grades. These tests will be short, and will be available from the end of lecture to the start of the next lecture – so your time to complete them is limited. I usually call these “self tests” as you are not in class when you complete them. Answers are provided at the deadline, so the penalty for late work is 90%.

**Calculating your grade**

Ideally canvas would keep a running tally of your grade, but it cannot do so for Bi212 because many of our assignments offer the possibility of earning more than 100% of the points for that assignment. I provide a Microsoft excel template for you to download, into which you can enter your own grades and keep track of your own progress. But the class is designed to allow you to benefit from progress – so rather than calculating your grade with any frequency – I recommend that you spend that time on the next assignment instead.

**Website** Many items from the course will be posted on the **Canvas** based website, including lecture notes. However, a word of caution is in order. Servers occasionally crash and if this happens, the website will be inaccessible. **THUS, WE URGE YOU TO DOWNLOAD OR PRINT ANY MATERIALS OF INTEREST FROM THE WEBSITE WELL IN ADVANCE OF EXAMS. WE WILL NOT RESCHEDULE QUIZZES OR EXAMS BECAUSE THE WEBSITE IS INACCESSIBLE**

**~~Grading during a pandemic~~**

~~I will be mindful of the many impacts the unfolding events related to COVID-19 may be having on you. During this unusual time, if you are not able to do an assignment, please communicate with me and we will strive to create an alternative plan to complete required coursework.~~

## **Evidence Based Teaching**

### Frequent testing

All published evidence supports the hypothesis that regular practice and frequent testing provide the best results in terms of student retention and learning. It is for this reason that I provide so many low point value assignments.

### Backward design

The assignments in this class include challenging problems that ask you to analyze novel situations beyond those presented in class. The material presented in class and in our many other resources (video and written) is designed to give you the skills to make the inferences and carry out calculations to succeed with these questions. I start with the goals of the course, then generate assignments that assess students on the basis of those goals, and only then create content to prepare students for the tasks I assign.

### Practice

In class I will try to show you experimental results and ask you to analyze them as a mechanism for understanding both how the biology works and how research reveals how the biology works. The in-class clicker assignments serve many functions, but not least is to provide lower stakes, time constrained challenges to prepare you for quizzes and exams. I hope that you will interact loudly with your classmates while answering clicker questions and form working relationships that blossom into friendships. I hope you will make use of our wandering TAs who would love to help you answer these questions. And ultimately I hope you will embrace this process of thinking like a scientist.

### Why make the effort?

Historically the grade a student receives in Bi212 has been considered a strong predictor of success in Bi214, upper division classes, and standardized tests including the GRE and MCAT. I do not know if grades in the class will correlate as well with subsequent success in the future, but I am very confident that if you work hard and really master the skills and concepts we present, and learn to do those same set of things that generations of students have learned before you – that you will be well prepared for the next stages of your academic journey.

### From effort to grades

The details of my grading system are published on a previous page. I may ADD grading options to what I have placed in the syllabus. If the grading system I have placed there in black and white ends up being the system that is to your greatest advantage, you can count on it getting you getting a grade with the standard 90% or better is some kind of A, 80% or better some kind of B conversion of course points to letter grade.

## Readings

### Journal articles:

We will make available a set of assigned and a set of optional readings on our website. Any textbook provides plenty of information and covers a wider range of topics than we cover in all four semesters of this biology sequence. But textbooks in general fail to provide an idea of the evidence supporting the models we teach for how biological systems work, and the processes that lead to our understanding of how things work. They tend to simplify too much. They tend to cost too much. Our assigned articles are designed to provide examples of the science methodology that leads to an understanding of the field, and to offer *up to the minute* coverage of topics that may not make it into textbooks for years to come. I don't list the articles until the course begins because I often switch out intended papers with even more recently published articles.

### Instructor Notes:

I create notes for every distance lecture that become available after that lecture assignment is due. These explain the reasoning behind answers to many of the questions in the assignments, but also a thorough coverage of the content provided in that lecture. These notes and the assigned papers are the reading material most appropriate for you to focus upon when you student for the class

### Supplementary content videos:

We have made screencast videos of the important content and themes of the class that you might use as a video textbook. During on campus terms most dedicated student watch these videos before coming to class, allowing us to focus on the application of that content during class.

**Any recent biology textbook would be an acceptable source of background information for Bi212, but I do not assign a textbook. I do provide a list of pages relevant to our class topics for the textbook historically used in Bi211 and Bi213. In the most recent term of Bi211 a free online text was used. It doesn't cover Bi212 course content at the depth required for our class, but it provides an excellent background for some topics.**

### The Textbook this sequence once used *Biological Science* by Freeman, Any edition.

The text can be used as a general reference throughout the four quarters of General Biology. Pertinent chapters are indicated in the readings document, specific page assignments will be given as we proceed. The readings include background material useful to prepare you for lecture and for studying for exams. We don't expect you to remember all the details in this material. A good strategy is to read the material twice: the first time skim over it, concentrating on the major concepts; the second time read it more carefully, concentrating on the parts relevant to the homework, lectures, or labs. You may expect that exams will cover only the material covered in lecture, but the text will provide a context and an alternative method of explaining that material.

## Student, instructor, and staff conduct

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 conferences on time and stay until class is over without making unnecessary noise that could distract your classmates.

### **Academic Integrity**

Students will be expected to adhere to the University's guidelines on academic integrity <https://policies.uoregon.edu/vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code>.

Academic misconduct is a serious concern that threatens the value of the degree you are working hard to earn. Your education is expensive, you should behave in ways that do not reduce the value of your degree for you and for your peers. Dishonesty has become rampant in political discourse, and as a nation we have failed to counter dishonesty with consequences. I believe honesty is our responsibility, yours and mine. You owe it to me and to your peers and to yourself to follow the conduct code, and we owe it to all of us to discover and report misconduct. I have a zero-tolerance policy for academic dishonesty, and I will suggest that students who are discovered to have engaged in cheating will, in accordance with University regulations and procedures, receive a failing grade for the course. Having the record of academic dishonesty on your record for even a single class is a penalty that will outweigh any gains you think you have accrued in all of your classes.

**Finally, you do not have permission to post any course related material on private or public websites (i.e. Chegg, GroupMe, CourseHero, Discord etc.). Doing so violates both University conduct policy and copyright law. I will vigorously investigate the source and use of all Bi212 material found on such websites.**

The University Student Conduct Code defines academic misconduct, which includes unauthorized help on assignments and examinations and the use of sources without acknowledgment. Academic misconduct is prohibited at UO. I will report misconduct to the Office of Student Conduct and Community Standards—consequences can include failure of this course. I will ask you to certify that your exams/papers are your own work.

*I encourage group work on the non-test assignments. But this does not include using websites outside of those provided through Canvas.*



- **University definitions of Academic Misconduct**

- a. Assisting in the commission of academic misconduct: Any intentional action that helps, or is intended to help, another engage in academic misconduct.
- b. Cheating: Unauthorized collaboration, accessing, or using of unauthorized materials, information, tools, or study aids.
- c. Fabrication: Making up data or results and recording, reporting, or using them as authentic.
- d. Multiple submissions of work: Using or submitting the same or substantially the same academic work for credit more than once, unless specifically authorized by the instructor of record for the course in which it's being submitted for credit. If authorized, appropriate disclosure and citation is required.
- e. Plagiarism: Presenting another's material as one's own, including using another's words, results, processes or ideas, in whole or in part, without giving appropriate credit.
- f. Unauthorized recording and/or use: Recording and/or dissemination of instructional content, or other intellectual property, without the express written permission of the instructor(s), intellectual property owner or the Accessible Education Center.

### **Class Courtesy**

Please arrive to class on time. Late arrivals distract the instructor and the other students. Please turn off cell phones during the class meeting times. Use your laptop only for class activities. Ask questions if you did not hear or understand something.

**Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter (or before) so that I may address you properly.**

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities. Classroom courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Our classroom is a learning environment, and as such should be a safe, inclusive and respectful place. Being respectful also includes using preferred pronouns for your classmates. Disrespecting fellow students as well as combative approaches, tones and/or actions are not acceptable. Please make me aware if there are classroom dynamics that impede your (or someone else's) full engagement.

## **Personal Emergencies**

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.

**Diversity** Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities.

## **Discrimination and Harassment**

### *Prohibited Discrimination and Harassment*

Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at [safe.uoregon.edu](https://safe.uoregon.edu). To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at [respect.uoregon.edu](https://respect.uoregon.edu) or [aao.uoregon.edu](https://aao.uoregon.edu) or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at [Discrimination & Harassment](#).

### *Reporting*

The instructor of this class is a Student-Directed Employee. As such, **if you disclose to me, I will respond to you with respect and kindness. I will listen to you and will be sensitive to your needs and desires. I will not judge you. I will support you.** As part of that support, I will direct students who disclose sexual harassment or sexual violence to resources that can help. **I will only report the information shared to the university administration when you as the student requests that the information be reported** (unless someone is in imminent risk of serious harm or is a minor). Please note the difference between 'privacy' and 'confidentiality.' As a Student-Directed Employee I can offer privacy because I am not required to report certain information to the university. However, I cannot be bound by confidentiality in the same way that a counselor or attorney is. Confidential resources such as these means that information shared is protected by federal and state laws. Any information that I as a student-directed employee receive may still be accessed by university or court proceedings. This means, for example, that I could still be called as a witness or required to turn over any related documents or notes that I keep.

Please note also that I am required to report all other forms of prohibited discrimination or harassment to the university administration. Specific details about confidentiality of information and reporting obligations of employees can be found at [titleix.uoregon.edu](http://titleix.uoregon.edu).

#### *Mandatory Reporting of Child Abuse*

UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. Child abuse pertains to individuals who are under the age of 18. This statement is to advise you that your disclosure of information about child abuse to the instructor may trigger my duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: [Mandatory Reporting of Child Abuse and Neglect](#).

*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 in 360 Oregon Hall at 541-346-1155 or [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu).*

**Academic Resources for Students** The Tutoring and Academic Engagement Center (Knight Library 4<sup>th</sup> floor; <https://apps.ideal-logic.com/uotutoring>) provides Individual tutoring (private-hire) available through the

Learning Specialists can help you with strategies for success in BI 212 and the sciences in general. You can work on time management, note-taking, effective study skills, etc. To make an appointment, call [541-346-3226](tel:541-346-3226) or schedule online at <https://engage.uoregon.edu/services/>

### **Class Encore study group for BI 212**

Do you enjoy studying with other people? Would you like to practice course concepts with additional help? Are you interested in learning strategies for academic success? If so, check out Class Encore, a Tutoring and Academic Engagement Center program that sets up small, structured study groups for challenging classes. The groups meet outside of class once a week for 50 minutes, weeks 2-10. Students gather to practice course concepts and study strategies with the assistance of a trained peer leader. Registration for Class Encore is FREE and open to ALL students enrolled in the class; each group is limited to the first 10-12 students who sign up. To register for a BI 212 study group, visit <https://classencore.uoregon.edu/>.

*Accessible Education Center* The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-1155, email at [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu)

*Center for Multicultural Academic Excellence (CMAE)* mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-3479, [cmae@uoregon.edu](mailto:cmae@uoregon.edu)

## **Reporting Obligations**

### **Mental Health and Wellness**

Life at college can be very complicated. Students often feel overwhelmed or stressed, experience anxiety or depression, struggle with relationships, or just need help navigating challenges in their life. If you're facing such challenges, you don't need to handle them on your own--there's help and support on campus.

As your instructor if I believe you may need additional support, I will express my concerns, the reasons for them, and refer you to resources that might be helpful. It is not my intention to know the details of what might be bothering you, but simply to let you know I care and that help is available. Getting help is a courageous thing to do—for yourself and those you care about.

University Health Services help students cope with difficult emotions and life stressors. If you need general resources on coping with stress or want to talk with another student who has been in the same place as you, visit the Duck Nest (located in the EMU on the ground floor) and get help from one of the specially trained Peer Wellness Advocates.

Find out more at [health.uoregon.edu/ducknest](http://health.uoregon.edu/ducknest).

University Counseling Services (UCS) has a team of dedicated staff members to support you with your concerns, many of whom can provide identity-based support. All clinical services are free and confidential. Find out more at [counseling.uoregon.edu](http://counseling.uoregon.edu) or by calling 541-346-3227 (anytime UCS is closed, the After-Hours Support and Crisis Line is available by calling this same number).”

### **Academic Disruption due to Campus Emergency**

In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in this course will be communicated as soon as possible by email, and on Canvas. If we are not able to meet face-to-face, students should immediately log onto Canvas and read any announcements and/or access alternative assignments. Students are also expected to continue coursework as outlined in this syllabus or other instructions on Canvas.

In the event that the instructor of this course has to quarantine, this course may be taught online during that time.”

### **Accessible Education**

The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu). If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course.

## **Academic Misconduct -**

The instructor has a zero tolerance policy for academic misconduct. The University Student Conduct Code (available at [conduct.uoregon.edu](https://conduct.uoregon.edu)) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. **Posting course material including videos, lecture notes, problems, and solutions, on any platform that is not officially affiliated with the course is prohibited and will be treated as academic misconduct and reported to the Dean of Students Office.** Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at <https://researchguides.uoregon.edu/citing-plagiarism>.

## **Inclement Weather**

It is generally expected that class will meet unless the University is officially closed for inclement weather. If it becomes necessary to cancel class while the University remains open, this will be announced on Canvas and by email. Updates on inclement weather and closure are also communicated in other ways described here: <https://hr.uoregon.edu/about-hr/campus-notifications/inclement-weather/inclement-weather-immediate-updates>

## **Basic Needs**

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course is urged to contact the Dean of Students Office (346-3216, 164 Oregon Hall) for support. This UO webpage includes resources for food, housing, healthcare, childcare, transportation, technology, finances, and legal support: <https://blogs.uoregon.edu/basicneeds/food/>

## **Accommodation for Religious Observances**

The university makes reasonable accommodations, upon request, for students who are unable to attend a class for religious obligations or observance reasons, in accordance with the university discrimination policy which says "Any student who, because of religious beliefs, is unable to attend classes on a particular day shall be excused from attendance requirements and from any examination or other assignment on that day. The student shall make up the examination or other assignment missed because of the absence." To request accommodations for this course for religious observance, visit the Office of the Registrar's website (<https://registrar.uoregon.edu/calendars/religious-observances>) and complete and submit to the instructor the "Student Religious Accommodation Request" form prior to the end of the second week of the term.