

BI 212, General Biology II: Organisms Syllabus and Information Sheet for Summer 2012

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Office hours will be held in KLA 35.

Course Background

This course is designed for both biology majors and non-biology majors with a professional interest in science that want an overview of the field of biology. This includes:

- Biology majors whose interests lie more in the areas of developmental biology, ecology or whole organism biology. However this sequence prepares you for any of the next set of biology courses.
- Students who are uncertain about their major and want to try out biology without an initial strong commitment to chemistry.
- Students who intend to major in a science other than biology and do not need the extended coverage of biochemistry and molecular genetics that is provided by the Bi251-253 sequence (e.g. Environmental Science, Environmental Studies, Psychology, Computer and Information Science majors).
- Students who are interested in teaching.

Course Prerequisites

The prerequisites for Bi 212 are C-, P, or better in Bi 211 and one term of Chemistry (111 or higher). Prerequisites will be enforced. If the BI 211 prerequisite has been waved because you are signed up for BI 211 during the first summer session, and you do not get at least a C- in 211, you will be dropped from Bi 212.

Course Goals

There are three major goals for this course (and the entire Bi211-Bi213 sequence).

Concepts: Biology is a large field so we will concentrate on a few major concepts rather than trying to cover everything superficially. To pass this course, students will need to demonstrate understanding of some major concepts of development and physiology of multi-cellular organisms, both plants and animals.

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.

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.

Course Format

Lectures (Monday-Thursday 9:00-10:50am in 282 LIL)

You should be familiar with the assigned readings before coming to lecture. During some lectures there may be activities, such as small group discussions or writing solutions to problems that will help you to stay actively involved. You may or may not be asked to turn these in, but your active participation will help you to understand the material and help to prepare you for exam problems.

Lab/Discussion activities (rooms 13 & 21 KLA)

The lab/discussion is a smaller group that meets twice a week for 110 minutes. The focus of this term's labs will be on designing experiments to test hypotheses related to physiology. Each laboratory exercise is introduced by a Pre-lab write-up. You should read both the pre-lab and the lab write-up before attending the lab session. 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.

Readings

Textbook Biological Science by Freeman, 3rd edition or 4th edition.

The text should be used as a general reference throughout the three quarters of General Biology. Pertinent readings are indicated in the schedule. 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. In addition, the assigned readings will be covered in homework.

Articles

We will make available a set of assigned readings on our website. Our 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. 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.

Website

Many items from the course will be posted on the Blackboard 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.**

Classroom 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 are always grateful for suggestions on how to improve the course. You may give us suggestions in person or by email. "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 barriers to your participation. You may also wish to contact the UO Accessible Education Center in 164 Oregon Hall, at 346-1155, or uoaec@uoregon.edu

There are some university guidelines for behavior to which we expect all students to adhere. One of these has to do with plagiarism, or taking credit for the work of others. This is a serious offense and will be treated according to the guidelines in the Student Conduct Code. This doesn't mean you shouldn't talk with other students about what you are thinking or writing; it does mean that when you write something, it should be in your own words, not copied from someone else. We

take this seriously. Plagiarism can have serious consequences for your academic career. Please don't be tempted to commit any of these offenses.

Out of respect for other students, and in keeping with departmental policy, you should plan to arrive at class on time and to stay until class is over. If, on occasion, you do arrive late, please be considerate of others and enter quietly at a time and in such a way that you don't disturb other students. If you need to leave early, please sit near an exit so that you can leave without disrupting the class. We ask that you not interfere with the ability of other students to learn by making noise when someone else (instructor or classmate) is talking.

It is really distracting when people are talking, texting, doing homework, or surfing the web during class. Because of this we do not allow computers in class and we would really appreciate it if you kept cell phones put away. If this is a huge problem, let me know and we can work something out.

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.

Grading

<u>Course Component</u>	<u>Percent of Grade</u>
Lab activities	6%
Presentation	6%
Project Report	8%
Quizzes (3)	9%
Homework	13%
Midterm	24%
Final	30%
Clickers	4%

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

Laboratory activities

Lab worksheets will be turned in at the end of each lab. Several labs will be used to work or report on the investigation project. One of four "grades" will be assigned for each of the lab write-ups:

- √+ (check plus) = 3 points: exceptionally well done
- √ (check) = 2 points: work was satisfactory
- √- (check minus) = 1 point: work was lacking in some aspect
- 0 = 0 points: work was inadequate or not completed

We anticipate that most of the scores will be checks. If you average checks (2's), you will receive full credit for the laboratory activity reports (6%). Consistent check plus grades on worksheets will be taken into account when final grades are assigned. 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 GTF as soon as possible to see if you can attend another lab section. Missing labs without an instructor verified explanation might cost you additional course points. Each lab section meets twice a week (Monday and Wednesday) for two hours.

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 addition to these preplanned exercises, you will present to the

class, a proposal for an experiment on circulation in humans. The proposal presentations will be done in groups of three, during the second week of class (July 25th). The class will vote for the most interesting, well planned out, and feasible proposal, which we will do as a lab during week 3 (July 30th). The project, worth 14% of your grade, consists of two parts: proposal presentation (6%), and a paper written by each individual (8%). Papers will be due as per the syllabus; late papers will be assessed a minimum 10% penalty. Failure to do a paper will adversely affect your presentation grade. The experiments you propose will be of your own design. You will need to generate a clear protocol and design the controls 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.

Investigation Paper

Once again, different papers are to be written by each student. Though you will share data that the lab collects, you may not work together writing the paper.

Quizzes

There will be 3 quizzes this term (on July, 18th, July 23rd, and August 6th). They are each worth 3% of your final grade. These will be given during the first ~20 min of class. In order to have the full-allotted time to take the quiz, you must arrive to class on time; there will be no make up Quizzes. Quizzes will cover previous lecture material, assigned readings, reading problems (at times reading problems will be available to help you think about the readings and lectures, they will not be turned in or graded), and pre-lab material (for labs that fall on the day of the quiz). The point of the quizzes is to encourage everyone is keep up with the material throughout the summer session.

Homework

There will be homework assignments posted on blackboard. These will be due every day before class (at 8:30am). Homework will cover previous lecture material, assigned readings, reading problems, and pre-lab material. **Late homework will not be accepted.** Some homework sets may be worth more points than others (like the first one) due to differences in length, but cumulatively the homework portion of the grade is 13%.

Exams

There will be two exams (one midterm and a comprehensive final). 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. IF YOU KNOW YOU WILL BE GONE DURING THE MIDTERM YOU MUST LET ME KNOW BEFORE CLASSES START. EVERYONE IS REQUIRED TO TAKE THE FINAL EXAM ON AUGUST 9th. BE CAREFUL WHEN MAKING TRAVEL PLANS, AS THERE WILL BE NO EARLY EXAMS AND NO MAKE-UP EXAMS.

Graduate Teaching Fellows and faculty grade exams. 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 GTF, 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 GTF or BPT.

Clickers (Personal Response Systems)

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. Questions during lecture that require clickers will be multiple choice or true/false. Points will be earned for participation and correctness of response.

Below is a tentative schedule of topics and assigned readings. **We reserve the right to make changes if necessary.** If changes are made, you will be informed, in class, in a timely manner. Please do the reading prior to class on the day they are assigned. Lab activities are indicated at the bottom of the Monday and Wednesday blocks.

Monday	Tuesday	Wednesday	Thursday
July 16th	July 17th	July 18th	July 19th
Study of Physiology/ body size / Homeostasis: 4 th 811-16, skim 806-10 3 ^{ed} 920-26, skim 916-20 Enzymes: 4 th 51-56, 156 3 ^{ed} 58-65, 181-182	Thermoregulation: 4 th 816-19 3 ^{ed} 926-31 Movement across membranes: 4 th 89-99, Fig 6.7 3 ^{ed} 105-16, Fig 6.8	Circulatory systems: 4 th 874-83 3 ^{ed} 994-1003 Carroll paper	Gas Exchange: 4 th 861-74 3 ^{ed} 978-94 Wang and Overguard paper
Lab: Enzymes	Saper Paper	Lab: Blood pressure Groups of 3 for projects, discuss ideas	
July 23ed	July 24th	July 25th	July 26th
Animal reproduction and development: 4 th 379-85, 388-95 3 ^{ed} 440-48, 451-61 Nusslein-Volhard Paper	Animal nutrition: 4 th 841-58 3 ^{ed} 827-35	Animal nutrition part 2	The Nervous system: 4 th 885-99 3 ^{ed} 1006-21
Lab: Development presentation prep		Lab: Group presentations of project proposals	
July 30th	July 31st	August 1st	August 2nd
Midterm Intro to Plant Form 4 th 695-706 3 ^{ed} 791-802	Plant tissues and cells: 4 th 706-15 3 ^{ed} 802-11 Water movement in plants: 4 th 717-28 3 ^{ed} 813-26	Water and sugar transport: 4 th 727-34 3 ^{ed} 827-35 Serna Paper	Plant Nutrition: 4 th 737-48 3 ^{ed} 837-48 Nitrogen cycle / fixation: 4 th 510-12, 748-50 3 ^{ed} 572-73, 849-50
Lab: Plant form	Holdbrook and Zwieniecki paper	Lab: Group Projects data collection and start of analysis	
August 6th	August 7th	August 8th	August 9th
Plant development: 4 th 404-11 3 ^{ed} 470-78	Response to light: 4 th 755-64, 787 3 ^{ed} 857-70 Project papers due @ beginning of class	Response to gravity (Auxin): 4 th 764-68 3 ^{ed} 870-74	Final
Lab: Transpiration		Lab: Review for final	