Principles of Biology

Portland State University

Bi 212: Principles of Biology II    Winter 2017

Instructor
Dr. Daniel Ballhorn
Office: SRTC, B1-62D
Lab: SRTC, B1-53
Email: ballhorn@pdx.edu. Please DO NOT use the online course resource (D2L) email address
Office Hours:
Mon 1:00 – 3:00 PM, SRTC B1-62D or by appointment

Lecture Teaching Asst. Brett Younginger (PhD Candidate, Ballhorn Lab)
Email: b.younginger@pdx.edu
Office hours:
Tue 1:00 – 3:00 PM, SRTC B1-62B or by appointment

Course Description
The Principles of Biology sequence (Bi 211, 212, and 213, along with labs Bi 214, 215 & 216) introduces the foundations of life science. In Bi 212 we examine the development, evolution and ecology of living organisms. Specific topics include plant and animal development, natural selection, speciation, form & function of organisms, biodiversity, and the introduction of major phyla.

Pre- & co-requisites
Chemistry 221 and 227 (or concurrent enrollment)
Co-requisite: Bi 215, Principles of Biology II Laboratory

Required items
Text: ‘Biological Science’ by Scott Freeman, 6th edition (Pearson)
Classroom response: i>clicker plus (http://www.iclicker.com). (note: iclicker2 remotes will also work. The iclickerREEF iclickerGO apps will NOT work for this class. You MUST have a clicker to get your answers counted).
Exams: Four Scantron forms SC982-E (the full-page form, available at PSU Bookstore), #2 pencils, & photo ID

Not required: “Study Guide for Biological Science” 6e
“Mastering Biology” access code

Learning Objectives
Upon completion of Bi 212 and Bi 215, students should be able to:

• Describe the underlying processes determining the reproduction and development of different organisms
• Define the evolutionary mechanisms representing the basis of biodiversity
• Identify cellular structures, organs and their functions in various organisms
• Compare and contrast life cycles of different organismal groups
• Explain the physiological processes in plants
• Explain how genetic information influences traits in individuals and their offspring
• Effectively utilize the vocabulary of developmental biology, evolution, cellular and molecular biology, and genetics

Skills Development
During this course, students will learn how to:
• Identify key organismal groups
• Create tables and graphs for reporting experimentally derived data
• Communicate observations, experimental design, execution and outcomes using a formal laboratory report format
• Apply common laboratory tools and physiological assays
• Work cooperatively to solve scientific problems and carry out organized experimentation
• Grasp scientific presentations
• Read and analyze selections from the primary scientific literature

Course Web Pages
I will use the PSU online resource “Desire 2 Learn (D2L)” for posting the lab manual, daily notes, announcements, exam grades, and other course materials. Please log in at: https://d2l.pdx.edu

Lectures
Section 1 (CRN 45431): MWF 10:00 – 11:05, CLSB 1A001
(Section 2 (CRN 4532): MW 18:40 – 20:30, Hoffman Hall)

Important Dates
Jan 15 Drop deadline (course not on transcript; 100% refund)
Jan 16 MLK Jr. Day – Monday labs are rescheduled
Feb 03 Lecture Exam 1
Feb 22 Lecture Exam 2
Feb 26 Withdraw/grading option change deadline
Mar 15 Lecture Exam 3
Mar 21 Final Exam 8:00 AM-9:50 PM, CLSB Room 1A001

A more detailed academic calendar can be viewed here:
https://www.pdx.edu/registration/calendar

Grading
Lecture (total 80%)
• Classroom response (“clicker”) questions: 10%
• Small group exercises: 15%
• Class exams (best 2 of 3): 25% each (total of 50%)
• Final exam: 25%
Exams
There will be three midterm exams, and one final exam (see schedule for dates). Your lowest midterm exam score will be dropped. If you are unable to make it to a midterm exam for any reason, it will be dropped as your lowest score. **No make-up exams will be given.** The final exam will cover the whole course, and cannot be dropped. If you know that you will need to miss two midterm exams or the final exam, you should not take Bi212 this term.

Classroom Response
Each lecture session will include questions to be answered using the required “i-clickers”. The first two week’s questions will not be graded, but weeks 3-10 will. Your lowest three day-scores from weeks 3–10 will be dropped. If you are unable to make it to class for any reason, that day’s clicker score will be dropped as one of your three lowest scores. **Missed clicker questions cannot be made up.** You must be physically present to answer clicker questions. Any instance of cheating with clickers will result in a zero for the final clicker grade.

**i>clicker registration:** To receive clicker grades, you must register your clicker via the link in the course D2L site. Login to D2L, click on this course (Bi212 – Principles of Biology), and find the iclicker registration link on the left hand sidebar. Click on the link and follow instructions.

Small Group Work
There will be five in-class small group exercises (see schedule for dates). The top four scores will be counted for your grade. If you miss one of these exercises for any reason, that day’s score will be dropped as your lowest. **Missed group exercises cannot be made up.**

Grading Policy
Grades will be assigned according to the percentage of possible points earned. As a rough guide, the top score on any given exam can be thought of as 100%. If you earn at least 90% of the highest score you will receive an A- or higher; if you earn at least 80% you will receive a B- or higher; if you earn at least 70% of the possible points you will receive a C- or higher; if you earn at least 60% of the possible points you will receive a D- or higher.

PSU’s policy on the temporary grade of Incomplete (“I”) is strictly adhered to in this course. Please note, you must be passing the course (with a C- or better) in order to be eligible for an “I” grade. See PSU Bulletin for more information: https://www.pdx.edu/registration/students.

Disability
If you have a disability and are in need of academic accommodation: first register with the Disability Resource Center (503)725-4150, http://www.drc.pdx.edu, then notify Dr. Ballhorn to make appropriate arrangements. **Note:** exams taken at the PSU Testing Center must be taken at the same time as class exams. No exceptions. Schedule exams at the Testing Center as soon as possible to ensure a spot. If for some reason you are unable to schedule any of your exams at the Testing Center for the appropriate time, let me know as soon as possible so I can arrange an alternative testing location.
Classroom and University Policies

Academic Honesty
Cheating or plagiarism of any kind will not be tolerated. See the PSU Code of Conduct: http://www.pdx.edu/dos/codeofconduct. If cheating is observed, the grade for the assignment will be a “0”, and cannot be dropped as a lowest score. The student will be reported to University officials as described in the Code (577-031-0142: Procedures for Complaints of Academic Dishonesty).

Academic Courtesy
Respect the rights of fellow students during the class period. Please avoid talking and other distracting behavior, and turn phones off.

When contacting your professor or TA by email or text, be sure to include the essentials of polite written communication: a greeting/salutation of some sort, enough background information to make your request or comment easily understood, a sign-off that includes your name as you wish to be addressed, and correct punctuation, spelling, and grammar. A polite message is much more likely to receive a speedy response.

Schedule
Students are expected to arrive for class on time so that lectures and labs start and end according to schedule. Since the Collaborative Life Sciences Building is separate from the main Portland State campus, it is important that you carefully plan your schedule to account for the extra travel time required. Information about transportation options can be found here: https://www.pdx.edu/transportation/.

Facilities
Everyone is expected to help maintain the appearance of the classroom and laboratory. After class, all trash should be removed and discarded appropriately, and lab benches should be left clean and organized.

Lost and Found
If you have lost an item at CLSB, first check with your instructor or TA to see if it was turned in. You may also leave a message at the OHSU Department of Public Safety Lost & Found voicemail line at 503-494-0881, or email them at pubsafety@ohsu.edu. Your call will be returned once the Lost & Found administrator checks for your item.

Safe Campus Module
Portland State University is committed to creating a safe campus for all students, and as part of this you are required to complete the Safe Campus Module in D2L. Log in to D2L, and under "My Courses," you'll find a sub-tab titled "Ongoing." Under the "Ongoing" sub-tab, you will see a course titled "Creating a Safe Campus." Click on this course and follow the prompts to complete the module.

Emergency information
In case of emergency, if you are inside CLSB dial 503-494-4444. If you are outside the building or walking back to campus dial 911. PSU 24 hour Campus Safety: emergency 503-725-4404, non-emergency 503-725-4407
Creating an equitable learning environment:

- Discussion in this class will be conducted in adherence to the University nondiscrimination policy.
- We should respect diverse points of view. We do not need to come to an agreement on any particular issues: we can agree to disagree.
- Our use of language should be respectful of other persons or groups. (As your instructor, I will not let injurious statements pass without comment.)
- You need not represent any group, only yourself, though you may choose to represent a group if you wish.
- If you feel uncomfortable about any aspect of the class environment, it is your responsibility to discuss it with the instructor.

Other PSU Resources

- C.A.R.E Team: http://www.pdx.edu/dos/care-team
### Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Scheduled Topics: Lecture topics <strong>may change</strong> from those listed in the syllabus, but <strong>exams and small groups will take place as scheduled.</strong></th>
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| 1    | Jan 09 – Jan 13 | **Lecture:** Animal & Plant Development  
         **Text:** Chapter 21  
         **Lab:** 1: Developmental Biology |
| 2    | Jan 16 MLK – Jan 20 | **Lecture:** Natural Selection; Evolutionary Processes  
         **Text:** Chapters 22 & 23  
         **Lab:** 2: Natural Selection |
| 3    | Jan 23 – Jan 27 | **Lecture:** Speciation  
         **Text:** Chapter 24  
         **Lab:** 3: Cnidarians, Platyhelminthes, Nematodes, and Annelids  
**Wednesday, Jan 25:** Small groups #1: **Deliberative Democracy**  
**Part 1:** Initial position and identify needed information |
| 4    | Jan 30 – Feb 03 | **Lecture:** Phylogenies & The History of Life; Protists  
         **Text:** Chapters 25 & 27  
         **Lab:** 4: Mollusks  
**Monday, Jan 30:** Small groups #2: **Deliberative Democracy**  
**Part 2:** Bring information together, come to consensus  
**HOUR EXAM 1 on Friday, Feb 03** |
| 5    | Feb 06 – Feb 10 | **Lecture:** Taxonomy and Introduction to Animals; Protostomes  
         **Text:** Chapters 30 & 31  
         **Lab:** 5: Arthropods |
| 6    | Feb 13 – Feb 17 | **Lecture:** Deuterostomes  
         **Text:** Chapter 32  
         **Lab:** 6: Phylogeny and Comparative Anatomy of Deuterostomes  
**Friday, Feb 17:** Small groups #3: **Phylogenetic Trees** |
| 7    | Feb 20 – Feb 24 | **Lecture:** Plant Form and Function  
         **Text:** Chapter 34; review Chapter 10 “Photosynthesis” on your own!!  
         **Lab:** 7: Photosynthesis and Plant Pigments  
**EXAM**  
**HOUR EXAM 2 on Wednesday, Feb 22** |
| 8    | Feb 27 – Mar 03 | **Lecture:** Plant Reproduction; Phylogeny (Green Algae & Plants)  
         **Text:** Chapters 38 & 28  
         **Lab:** 8: Vegetative Structure & Function  
**Monday, Feb 27:** Small groups #4: **Deliberative Democracy**  
**Part 1:** Initial position and identify needed information |
| 9    | Mar 06 – Mar 10 | **Lecture:** Water & Sugar Transport; Plant Nutrition  
         **Text:** Chapters 35 & 36  
         **Lab:** 9: Stomatal Density  
**Monday, Mar 06:** Small groups #5: **Deliberative Democracy**  
**Part 2:** Bring information together, come to consensus |
| 10   | Mar 13 – Mar 17 | **Lecture:** Plant Sensory Systems  
         **Text:** Chapter 37  
         **Lab:** Lab 10: Reproduction; SPECIES ACCOUNTS DUE  
**EXAM**  
**HOUR EXAM 3 on Wednesday, Mar 15** |
|      | Mar 20 – Mar 24 | **Final Exam (Comprehensive)**  
**Tue, Mar 21:** 8:00 AM – 9:50 AM |
PLEASE THINK TWICE BEFORE YOU PRINT OUT THE LECTURE PDFs!
PLEASE HELP SAVE PAPER – AND OUR FORESTS!
If you must print, double check settings to print 4 slides per page, and print double-sided if possible.

Tips for Success

Be an active learner. Read the book ahead of class. Attend all lectures. You are responsible for all topics discussed in the lecture, even if they do not appear in the online notes. Take notes during class – do not rely on the printed-out class notes. Write down questions that come to mind during the lecture. Identify points in the lecture that you think are the main points. Review your notes after class, incorporating details that you remember but didn't get written down. While you are reading the textbook, take time to think about what you are reading. How does it fit with what you know already? Combine the information from the lecture and the text into one set of complete notes to review and study. Consider using the simple and powerful Cornell System of note-taking and review: http://tinyurl.com/27yt64g

Figure out and use your learning strengths. Learning styles vary from person to person. You might do your best studying through reading, writing, making or drawing models, or through discussion with fellow students. Most likely, it will take some of each of these to be most successful. Experiment, reflect on the outcomes, and use the techniques that work best for you.

Spend time on this course. Schedule and spend time reading and reviewing course materials ahead of class. During class, take careful, organized notes. After class, revisit your notes, and think about the logical structures underlying the subjects. Plan on spending a significant amount of time (10-12 hours/week) working on this course. Later topics build upon earlier portions of the course: do not let yourself fall behind.

Ask for help if you need it. Come to my and your TA’s office hours, find a study partner or study group, use the Discussions board on D2L, etc. You'll make the best progress when you work to identify the areas you need to work on, and are active about seeking guidance.

Use the University resources. Campus services are available to help you with all aspects of your education, see http://www.pdx.edu/studentaffairs. PSU's undergraduate advising website is http://www.pdx.edu/advising. The Undergraduate Advising and Support Center (UASC), 425 Smith Center, http://www.pdx.edu/advising/academic-resources-and-services, offers academic advising and referral, academic support programs, community college relations, disability resource center, athletics advising, study skills workshops, tutorial programs, and student veteran services. The Peer Tutoring and Learning Center offers tutoring in many subjects (including Biology), as well as various workshops, see http://www.pdx.edu/tutoring/.