Principles of Biology
Portland State University

Bi 211: Principles of Biology I  Fall 2015

Instructor
Dr. Michael Bartlett
Office:  458 SRTC
Email:  use online course resource (D2L)
Office Hours:
- M 1 – 2 PM in 458 SRTC
- W 11:15 AM – 12:15 PM in 2N004 CLSB

Lecture Teaching Asst.
Claire Riggs
Email:  rclaire@pdx.edu
Office Hour:  W 11:15 AM – 12:15 PM in 2N004 CLSB

Course Description
The Principles of Biology sequence (Bi 211, 212, & 213, along with labs Bi 214, 215 & 216) introduces the foundations of life science. In Bi 211 and 214 we examine the molecular and cellular underpinnings of living organisms. Specific topics include biochemistry, cell biology, molecular biology, biotechnology, microbiology, and genetics.

Pre- & co-requisites
Chemistry 221 and 227 (or concurrent enrollment)
Co-requisite: Bi 214, Principles of Biology I Laboratory

Required items
Text: ‘Biological Science’ by Scott Freeman, 5th edition (Pearson)
Classroom response: i>clicker plus (http://www.iclicker.com). (note: iclicker2 remotes will also work. The iclickerREEF and 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” 5e
“Mastering Biology” access code

Learning Objectives
Upon completion of Bi 211 and Bi 214, students should be able to:
- Describe the importance and roles of chemical bonds and chemical energy in biological processes
- Define the macromolecules required for cellular processes, and their synthesis, cellular localization, and structure/function relationships
- Identify cellular structures and their functions
- Interpret and apply models that illustrate energy capture and use in biological systems
- Interpret and apply models that illustrate the mechanisms of heredity and control of gene expression, especially cell division, DNA replication, transcription, and translation
• Explain the utility of molecular biology for human health and biotechnology
• Explain how genetic information influences traits in individuals and their offspring
• Effectively utilize the vocabulary of biochemistry, cellular and molecular biology, and genetics

Skills Development

During this course, students will learn how to:
• Generate hypotheses and test them experimentally
• Create tables and graphs for reporting experimentally derived data
• Communicate experimental design, execution and outcomes using a formal laboratory report format
• Apply common laboratory tools of molecular biology and microbiology
• Work cooperatively to solve scientific problems and carry out organized experimentation
• Read and analyze selections from the primary scientific literature

Course Web Pages

I will use the PSU online resource “D2L” for posting the lab manual, daily notes, announcements, exam grades, and other course materials. Log in at https://d2l.pdx.edu

Lectures

Section 1 (CRN 16282): MWF 10:00 – 11:05, CLSB 1A001
(Section 2: MW 18:40 – 20:30, Hoffman Hall)

Important Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>Oct 11</td>
<td>Drop deadline (course not on transcript)</td>
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<tr>
<td>Oct 21</td>
<td>Lecture Exam 1</td>
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<tr>
<td>Nov 11</td>
<td>Veteran’s Day – Wednesday labs are rescheduled</td>
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<tr>
<td>Nov 13</td>
<td>Lecture Exam 2</td>
</tr>
<tr>
<td>Nov 15</td>
<td>Withdraw/grading option change deadline</td>
</tr>
<tr>
<td>Nov 26-27</td>
<td>Thanksgiving Break</td>
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<tr>
<td>Dec 2</td>
<td>Lecture Exam 3</td>
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<tr>
<td>Dec 8 (Tue)</td>
<td>Final Exam 8 – 9:50 AM, CLSB Room 1A001</td>
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A more detailed academic calendar can be viewed here: http://www.pdx.edu/registration/calendar

Grading

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 Bi211 this term.

Classroom Response

Each lecture session will include questions to be answered using the required “i-clickers”. The first week’s questions will not be graded, but weeks 2-10 will. Your lowest three day-scores from weeks 2 – 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 (Bi211 – 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 highest cumulative score 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 the PSU Bulletin for more information: [http://www.pdx.edu/oaa/psu-bulletin](http://www.pdx.edu/oaa/psu-bulletin).

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](http://www.drc.pdx.edu), then notify Dr. Bartlett 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](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: [http://www.pdx.edu/transportation/clsb](http://www.pdx.edu/transportation/clsb).

**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 pubsafe@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.
## Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Scheduled Topics: Lecture topics may change from those listed in the syllabus, but exams and small groups will take place as scheduled.</th>
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</table>
| 1    | Sep 28 – Oct 2 | **Lecture:** The science of biology. Molecules, chemical bonds, and water  
**Text:** Chapters 1 and 2  
**Lab:** 1: Orientation. Plant pigments and pH.  |
| 2    | Oct 5 – Oct 9 | **Lecture:** Proteins and nucleic acids, and carbohydrates  
**Text:** Chapters 3 and 4  
**Lab:** 2: DNA purification, protein folding.  
*Friday, October 9: Small groups #1: Viruses and antivirals*  |
| 3    | Oct 12 – Oct 16 | **Lecture:** Carbohydrates, lipids, membranes, and cells  
**Text:** Chapters 5, 6, and 7  
**Lab:** 3: Microscopes, microfossils and living micro-organisms  |
| 4    | Oct 19 – Oct 23 | **Lecture:** Energy and cellular metabolism, photosynthesis  
**Text:** Chapters 8, 9 and 10  
**Lab:** 4: Cellular respiration  
*HOUR EXAM 1 on Wednesday, October 21*  |
| 5    | Oct 26 – Oct 30 | **Lecture:** DNA, gene expression  
**Text:** Chapters 15, 16, and 17  
**Lab:** 5: Genetic transformation  
*Friday, October 30: Small groups #2: DNA replication*  |
| 6    | Nov 2 – Nov 6 | **Lecture:** Gene regulation  
**Text:** Chapters 29, 18, and 19  
**Lab:** 6: Monitoring gene expression  
*Friday, November 6: Small groups #3: Control of gene expression*  |
| 7    | Nov 9 – Nov 13 | **Lecture:** Biotechnology, genomes  
**Text:** Chapters 20 and 21  
**Lab:** 7: DNA, restriction enzymes, and electrophoresis  
*HOUR EXAM 2 on Friday, November 13*  
*No class on Wednesday, Nov 11 (Veteran’s Day)*  |
| 8    | Nov 16– Nov 20 | **Lecture:** Cell surfaces, cell division: mitosis and meiosis  
**Text:** Chapters 11, 12, and 13  
**Lab:** 8: Cell division  
*Wednesday, November 18: Small groups #4: Genetic engineering I*  |
| 9    | Nov 23 – Nov 25 | **Lecture:** Genes and genetics  
**Text:** Chapter 14  
**Lab:** 9: Bioinformatics  
*Wednesday, November 25: Small groups #5: Genetic engineering II*  
*Thanksgiving week: No classes Nov. 26th – 27th*  |
| 10   | Nov 30 – Dec 4 | **Lecture:** Viruses, optional review session on December 4.  
**Text:** Chapter 36  
**Lab:** Lab 10: Genetics  
*HOUR EXAM 3 on Wednesday, Dec 2*  |
| Finals | Dec 7 – Dec 11 | **Final Exam (Comprehensive)**  
**TUESDAY, Dec 8  8:00 – 9:50 AM**  |
Tips For Success

1. **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](http://tinyurl.com/27yt64g)

2. **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.

3. **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.

4. **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.

5. **Use the University resources.** Campus services are available to help you with all aspects of your education, see [http://www.pdx.edu/studentaffairs](http://www.pdx.edu/studentaffairs). PSU's undergraduate advising website is [http://www.pdx.edu/advising](http://www.pdx.edu/advising). The Undergraduate Advising and Support Center (UASC), 425 Smith Center, [http://www.pdx.edu/advising/academic-resources-and-services](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/](http://www.pdx.edu/tutoring/).