

BI 315 Cell Biology
Western Oregon University
Spring 2013

Contact Information

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Natural Sciences 219

Office Hours: W 1:30 – 3:30 p.m.
Th 11:30 a.m. – 1:00 p.m.
F 9:00 – 10:30 a.m.

Meeting times and location

Lecture: MWF 11:00 – 11:50 a.m.

Natural Sciences 103

Lab: Tu, Th 8:00 – 10:50 a.m.

Natural Sciences 202

Tu 12:30 – 3:20 p.m.

Required Books

Molecular Cell Biology 7th edition, 2013. Lodish, Berk, Kaiser, Kreiger, Bretscher, et al. W. H. Freeman and Company.

Writing Papers in the Biological Sciences 5th edition, 2012. McMillan. Bedford/St. Martin's.

Course description

This course is an introduction to the basic concepts of cell biology. Among other topics, we will cover protein structure and function, DNA structure, cytoskeleton structure and function, membrane channels, and cellular communication. We will cover techniques important to cell biology—both in lecture and in lab. You will have covered some of these topics and techniques in other classes; hopefully, we will build on your current expertise and expand your knowledge and biological skill set.

Course Goals

- Understand the role of different cell structures and organelles
- Understand the role of proteins in cell functioning
- Understand the role of membranes in cell functioning
- Understand how cells interact with each other and their environment
- Learn how to use new experimental techniques to ask biological questions
- Be able to critically evaluate primary literature articles

Lecture

The primary textbook for the course is *Molecular Cell Biology* by Lodish, et al. In order to synchronize lecture topics with lab activities, we will jump around and cover select portions of the textbook. We do not have enough time in class to cover the entire textbook; the sections we will focus on are listed in the course schedule posted on the class Moodle site. If you read each assigned chapter before attending lecture, the lectures will be far more valuable to you for two reasons: 1) you will already have been introduced to the terminology and concepts we are discussing; 2) you will be able to ask informed and thoughtful questions. Asking questions requires you to process facts and information and can be a wonderful way to learn and understand new concepts.

Lab

The goal of lab is to expose you to techniques that are commonly used in cell biology. You will be expected to prepare for lab before you attend lab each week. You will have a quiz for some labs, as listed on the class schedule. You will be expected to write multiple lab reports, including drafts for several labs. We will use *Writing Papers in the Biological Sciences* in lab for discussions on how to write appropriate lab reports.

Moodle site

I will post lectures slides, lecture audio recordings, study guides, lab instructions, and course announcements on the class Moodle site. Do not mistake the on-line lecture slides and audio recordings to be adequate replacements for lecture attendance. You can't ask questions to the posted slides and you won't see anything presented on the overhead projector. **IT IS YOUR RESPONSIBILITY TO VISIT THE SITE ON A REGULAR BASIS TO DOWNLOAD MATERIALS AND RECEIVE THE NEEDED INFORMATION.**

General Etiquette

Use of a computer for note-taking in class is fine, but should not be used for emailing, chatting, surfing, etc., during class. Recreational use of your computer in class is distracting to those around you. Similarly, cell phones should be off during class. If you are using a cell phone during lab, you are distracted from your work and are creating an unsafe working environment. If you cannot ignore your cell phone during lab, do not bring it to lab. There was once a world without cell phones and people were able to survive for 170 minutes without texting—you can, too.

Evaluation and Expectations

Exams

There will be two midterm exams (50 minutes each) and one final exam (110 minutes). Approximately half of the final exam will cover new material and the other half will be cumulative. The exams will cover lecture material, lab topics, and assigned readings. The exams will consist primarily of multiple choice and short answer essay questions. The goal of the exam is to evaluate your understanding of the class material, your ability to explain concepts and ideas, and your ability to apply concepts and ideas to new problems.

Primary literature analysis

One of our focuses this term will be reading and understanding primary scientific literature. While we usually use textbooks, websites, and review papers to get general, big picture information on scientific subjects, all of the knowledge in textbooks, websites, and review papers is based on primary literature. To become a science-literate citizen, you need to be comfortable with primary literature.

During lecture, I will present 3 primary literature articles. Before coming to class on these days, you will be expected to read the article and complete a short analysis based on questions I will post on Moodle. **YOUR PRIMARY LITERATURE ANALYSES ARE DUE AT THE BEGINNING OF LECTURE.** Part of the purpose of these exercises is for you to practice reading and interpreting primary literature on your own.

Once I have presented the article to the class, you cannot submit your analysis. **THE LITERATURE ANALYSES NEED TO BE SUBMITTED AS A HARD COPY.** If you are going to miss class for an excused reason, you may submit an analysis **EARLY**. If you miss class because you are ill, you can submit an electronic copy **BEFORE CLASS** and submit a hard copy later. **TO HAVE AN ABSENCE EXCUSED, YOU MUST CONTACT THE OFFICE OF STUDENT AFFAIRS (503-838-8221). THE**

OFFICE OF STUDENT AFFAIRS WILL CONTACT YOUR INSTRUCTORS INFORMING US OF THE SITUATION.**Primary literature presentation**

During the last week of lab, you will be expected to present a primary literature article with a partner. You and your partner will need to select an article on a topic of your choice, explain the relevance of the article, explain the basic methods used, explain the results, and discuss the implications of the findings. We will discuss these presentations in more detail as the term progresses. However, you should start thinking about topics you find interesting and start looking for articles early in the term. To receive full credit on this assignment, you will be expected to submit your article selection 2 weeks before your presentation.

Pre-lab assignments and quizzes

Each laboratory guide will be posted on Moodle in advance of lab. You are expected to read through the laboratory guide **BEFORE** coming to lab each week. Most labs will include a pre-lab component. Some weeks we will have a quiz at the start of lab.

Lab assignments

Many labs will have an assignment that will be completed during or after lab, including several formal lab reports. In class, you will be working with a lab partner. You may work with lab partners outside of class; however, **ALL WRITING—INCLUDING FIGURE CAPTIONS AND TABLE HEADINGS**—is expected to be done individually.

Document format

You are welcome to submit any lab assignment electronically or as a hard copy. If submitted electronically, I will confirm receipt when I get the document. **ELECTRONIC DOCUMENTS THAT DO NOT MEET THE GUIDELINES BELOW WILL EARN A 10% DEDUCTION AND WILL BE CONSIDERED LATE UNTIL I GET A DOCUMENT IN THE PROPER FORMAT:**

- 1) The document should be a .docx file. You may send a .doc file, but you are responsible for any formatting changes when the document is opened in Microsoft Office Word 2007.
- 2) The **SUBJECT LINE OF YOUR EMAIL** must read YOUR LAST NAME_BI315_Assignment name. For example, if I were sending a lab 3 report, the subject line would be:
BALTZLEY_BI315_Lab3Report
- 3) The **FILE NAME** must be YOUR LAST NAME_BI315_Assignment name. See above example.
- 4) I will occasionally print electronic documents and grade a hard copy. Therefore, your name must be in the body of the document.

Lab attendance

Lab attendance is required. You will have lab partners that are counting on you to attend lab. If you have an unexcused absence, you will not have the opportunity to make-up lab. If you cannot attend a lab meeting, please let me and your lab partners know in advance. If you let us know in advance that you will be missing a lab meeting, we may be able to work out a way for you to make-up the lab. **IF YOU MISS A LAB AND HOPE TO HAVE YOUR ABSENCE EXCUSED, YOU MUST CONTACT THE OFFICE OF STUDENT AFFAIRS (503-838-8221). THE OFFICE OF STUDENT AFFAIRS WILL CONTACT YOUR INSTRUCTORS INFORMING US OF THE SITUATION.**

Lab late policy

Quizzes will be given at the beginning of lab. If you are late to lab, you will not have the opportunity to make-up the quiz. I will accept late lab assignments, but you will lose 10% for each day, including weekend days, that an assignment is late. If your lab begins at 8 a.m., your assignment is late at 8:01.

Academic Misconduct

Cheating (e.g. using notes, electronic devices of any kind, copying, or making information available to classmates during an exam) or presenting the work of another person as one's own (plagiarism) are serious breaches of academic honesty. The work you turn in is expected to be your own, and information from others is expected to be cited appropriately. I expect you to have academic integrity and abide by the University Code of Student Responsibility. Academic Dishonesty is defined by the university in the Student Code of Responsibility. A single instance of cheating or plagiarism will result in a zero on the assignment in question and may entail a failing grade for the course as well as disciplinary action through WOU's Student Judicial System. A continuing pattern of failure to maintain a high level of academic honesty can lead to dismissal from WOU. Please review:

www.wou.edu/student/residences/pdfs/the_code_of_student_responsibility.pdf

Grading

		Letter grades	
Exam 1	100	A	93%
Exam 2	100	A-	90%
Final	200	B+	87%
Primary literature		B	83%
Analysis (3 x 15)	45	B-	80%
Presentation	50	C+	77%
Laboratory		C	73%
Lab quizzes	55	C-	70%
Lab assignments	200	D	60%
Total	750	F	<60%

Additional resources**Student Services**

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Office of Disability Services at 503-838-8250 or ods@wou.edu to coordinate accommodations. Students needing medical or mental health care can access the Student Health and Counseling Center by calling 503-838-8313, emailing at health@wou.edu, or by walking in to schedule an appointment.

The Learning Center:

This office has services available for students to help them be successful, including tutoring, study groups and skills, and other resources. Please visit:

www.wou.edu/provost/aalc/learning/index.php

Writing Center

The Writing Center in APS 301 is open to students in all disciplines. Contact them at 503-838-8286, or visit their online scheduling:

<http://www.wou.edu/las/humanities/writingctr/>

Technology Recourse Center (TRC)

The TRC provides technology support and resources to faculty, staff and students. The TRC is located in ITC 204, 503-838-8965. Their website is www.wou.edu/trc

Library

Library and Media services offer assistance with research and information retrieval. Ask at the reference desk in Hamersly Library. Phone/TTY: 503-838-8418.

WOU Student Success Specialist

Students in this class may be referred to the WOU Student Success Specialist if the instructor determines their performance in the class is placing them at academic risk. The Student Success Specialist will offer to work with referred students to address issues and develop a student success strategy. Irrespective of whether a referral has or has not been made, you are ultimately responsible for tracking your own progress in this course.

BI 315, Winter 2013
Tentative Class Schedule

Date	Lecture Topic	Chapter (pp.)	Lab	Assignments Due
7-Jan	Presentation by Service Learning & Career Development		Lab 1: Lab safety & Primary literature	LAB 1 WILL MEET IN HAMERSLY 108
9-Jan	Molecules, cells, and evolution	1 (1-23)		
11-Jan	Energy & biosynthesis	2 (23-58)	Read: McMillan, Ch. 1	Lab: Pre-lab assignment
14-Jan	DNA structure, DNA to protein	4 (117-144)	Lab 2: DNA #1	Lab: Pre-lab and lab safety quiz
16-Jan	Endosymbiosis, Origins of life	6 (245-249); 9 (424-427)	Read: McMillan, Ch. 4	Lab: Primary literature lab report
18-Jan	Analyzing DNA	5 (182-198; 212-216)		
21-Jan	MLK--No Class		Lab 3: DNA #2 & Writing workshop	Lab: Pre-lab quiz
23-Jan	Cell culture and microscopy	9 (397-423)		Lab: DNA lab draft
25-Jan	Isolation and interference	9 (424-441)	Read: McMillan, Ch. 7 & 8	
28-Jan	Rochette and Brash, 2010	McMillan (191-201)	Lab 4: Enzymology #1	28-Jan: Analysis questions
30-Jan	Protein shape and structure	3 (59-85)		Lab: DNA lab report
1-Feb	Protein function	3 (85-108)		
4-Feb	Exam 1		Lab 5: Protein folding & Experimental design	Lab: Enzymology lab draft
6-Feb	Membrane structure and function	10 (443-468)		
8-Feb	Membrane transport and pumps	11 (473-494)	Read: McMillan, Ch. 3	
11-Feb	Ion channels and transporters	11 (495-515)	Lab 6: Enzymology #2	Lab: Pre-lab quiz
13-Feb	Cell communication	15 (673-692)		
15-Feb	Ta et al, 2010			15-Feb: Analysis questions
18-Feb	Cell communication	15 (692-719)	Lab 7: Immunohistochemistry #1	Lab: Enzymology lab report
20-Feb	Cytoskeleton (actin)	17 (773-793)		
22-Feb	Cytoskeleton (myosin)	17 (793-819)		
25-Feb	Exam 2		Lab 8: Immunohistochemistry #2 and Microscopy	Lab: Pre-lab quiz
27-Feb	Microtubules	18 (821-849)		
1-Mar	Mitosis	18 (849-872)		
4-Mar	Foe and von Dassow, 2008		Lab 9: Cilia and cytoskeleton	4-Mar: Analysis questions
6-Mar	Protein targeting I	13 (577-594)		Lab: Immuno lab report
8-Mar	Protein targeting II	13 (594-621)		Lab: Cilia worksheet
11-Mar	Cell cycle	19 (873-913)		Lab: Primary literature presentation
13-Mar	Cell adhesion	20 (925-960)		
15-Mar	Apoptosis	21 (1006-1021)		
20-Mar	Final Exam: 10:00 - 11:50 a.m.			