

BB314: Cell and Molecular Biology

Lectures in Gilfillan Auditorium (AUD), 2-3:20 pm TTh

Instructor: Dr. Marc J. Curtis

Office: Cordley Hall 4108

Office Hours: Tuesday 9 am to 11 am, or by appointment

Email: curtism@science.oregonstate.edu

Prerequisites: (BI 211 [C-] or BI 211H [C-]) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-]) and (CH 331 [C-] or CH 334 [C-])

COURSE LEARNING GOALS

1. Improve your sense of the organization, flow and mechanisms of life.
2. Relate cell behaviors to development, physiology, pathology, drugs and ecology.
3. Evaluate the protein mechanisms that account for cell behaviors.
4. Recognize the central role of membranes to cellular organization and energy conversions.
5. Examine how genetic information is expressed: regulation, transcription and translation.
6. Appreciate that genetic information is always accumulating mutations.
7. Improve your scientific literacy.
8. Exercise your mind.

Weekly Study Problems: Each week study problems are posted to help you focus on details that will be on exams. Study problems are **NOT** turned in. An answer key will be provided at the end of each week.

Textbook: *Essential Cell Biology*, 4th Edition, by Alberts et al. (The 3rd Edition is sufficient.) There are 2 copies on reserve at the OSU library.

Exams cover lecture content that overlaps with reading assignments. A practice exam, review session and vocabulary list will be provided before each exam.

Make-up exams and **late recitation assignments** require documented illness or family emergency. Contact me or your TA **before** the exam or recitation assignment is due.

Points: Total = 450

2- Midterm Exams (**200 points**)

7- Recitation Group Problems (**35 points**)

7- Recitation Assignments (**95 points**)

1- Cumulative Final Exam (**120 points**)

Canvas

Lecture slides will be posted on the BB314 Canvas website no later than the evening before lecture. You are expected to come to class prepared by at least skimming the chapter assigned to each lecture and taking notes during lecture.

PLEASE TURN-OFF AND DO NOT USE CELL PHONES DURING CLASS!!!

Unit1: Organization, Flow and Mechanisms of Life			
Week 1	1/8	Course overview	
	1/10	<i>Cell Communities</i> : tissues, stems cells and cancer	Ch.20
2	1/15	<i>Organization</i> : diversity and unity	Ch.1
	1/17	<i>Organization</i> : molecular	Ch.2
3	1/22	<i>Flow</i> : free-energy and work	Ch.3
	1/24	<i>Mechanisms</i> : protein structure and function	Ch.7 p238-248 Ch.4
4	1/29	<i>Mechanisms</i> : membrane structure and function	Ch.11
	1/31	<i>Mechanisms</i> : membrane structure and function	Ch.12
5	2/5	Exam1	
Unit2: Cell Behaviors			
	2/7	<i>Cell cycle</i> : growth, division and death	Ch.18
6	2/12	<i>Signaling</i> : receptors and transduction	Ch.16
	2/14	<i>Signaling</i> : receptors and transduction	Ch.16
7	2/19	<i>Secretions</i> : protein sorting and the endomembrane system	Ch.20 p684-694 Ch.15
	2/21	<i>Changing shape</i> : intermediate filaments and microtubules	Ch.17
8	2/26	<i>Changing shape</i> : actin filaments	Ch.17 Ch.20 p694-701
	2/28	<i>Differentiation</i> : regulation of gene expression	Ch.5 and 8
9	3/5	Exam2	
Unit3: Genome Expression and Mutation			
	3/7	<i>From DNA to RNA to Protein</i> : transcription and translation	Ch.7
10	3/12	<i>Mutation</i> : DNA replication, repair and recombination	Ch.6
	3/14	<i>Mutation</i> : DNA replication, repair and recombination	Ch.6 Ch.20 p702-725
11	3/18	Final Exam 12:00	

Recitations:

NASH 214	(Sec: 010)	Tuesday	9:00 a.m.	Miranda Leek
LINC 307	(Sec: 011)	Tuesday	4:00 p.m.	Isabelle Logan
BEXL 412	(Sec: 012)	Wednesday	9:00 a.m.	Isabelle Logan
NASH 204	(Sec: 013)	Wednesday	1:00 p.m.	Isabelle Logan
BEXL 412	(Sec: 014)	Wednesday	4:00 p.m.	Miranda Leek
HOV 202	(Sec: 015)	Friday	9:00 a.m.	Miranda Leek

TA office hours:

Isabella Logan, ALS 2031, Wednesday, 10 am to 11 am, or by appointment

email: logani@oregonstate.edu

Miranda Leek, ALS 2031, Monday, 9 am to 10 am, or by appointment

email: leekm@oregonstate.edu

Recitation In-Class Group Problems and Assignments

There are a total of **35 pts** for completing Group Problems (**5 pts** each) during recitation. You must attend 7 recitations to get all **35 pts**. In other words, you can miss 3 recitations without losing points. However, attending all recitations is recommended.

There are 7 assignments worth a total of **95 pts**. Assignments are posted on Canvas. Instructions for assignments will be given during recitation. Assignments are completed at home and due the following week. Assignments handed in late lose 1 point per day.

Week	In-Class Group Problem	Assignment
1	Nested Hierarchy	R1 - Nested Cubes (15 pts)
2	Flow and Mechanism	R2 - Flow and Mechanism (15 pts)
3	Focusing on an Interface	R3 - Propose an Interface to Engineer (15 pts)
4	Having Fun with Mutation	No Assignment
5	Cell Cycle Checkpoints	R4 - Cell Cycle Sequence of Events (10 pts)
6	Signal Transduction	R5 - Signal Transduction Analogy (10 pts)
7	Orientation of Proteins in the Endomembrane System	No Assignment
8	Gene Reporters	R6 - Browsing the Human Genome (15 pts)
9	Transcription and Translation	R7 - The Genetic Code (15 pts)
10	Mutation Rate	No Assignment

STUDENTS WITH DISABILITIES

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

COURSE ETHICS

This course follows the university rules on civility and honesty. These can be found at <http://oregonstate.edu/instruct/cssa556/CIVHON556.htm>.

- Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:
 - Cheating- use or attempted use of unauthorized materials, information or study aids
 - Fabrication- falsification or invention of any information
 - Assisting- helping another commit an act of academic dishonesty
 - Tampering- altering or interfering with evaluation instruments and documents
 - Plagiarism- representing the words or ideas of another person as one's own
- Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

“The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office.”