BB314: Cell and Molecular Biology

Lectures in Cordley Hall (CORD), Room 1109, 10 -11 am MWF

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 and physiology.
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,* Fourth Edition, by Alberts et al.
The Third Edition is sufficient.

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 = 430

2- Midterm Exams (**180 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 BI314 Canvas website no later then the evening before lecture. You are expected to take notes and come to class prepared by at least skimming the chapter assigned to each lecture.

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

Unit1: Cell Organization, Flow and Mechanisms			
Week 1	1/8	The Organization, flow and mechanisms of life	Ch.1
	1/10	The Organization, flow and mechanisms of life	Ch.1
	1/12	Cell diversity and cell organization	Ch.1
2	1/15	Martin King Jr. Day (**No Classes**)	
	1/17	Cell molecular organization	Ch.2
	1/19	Flow: free-energy and work	Ch.3
3	1/22	Mechanisms: proteins	Ch.4
	1/24	Mechanisms: proteins	Ch.4
	1/26	Membrane structure	Ch.11
4	1/29	Membrane transport	Ch.12
	1/31	Electron transport chain, proton motive force and ATP synthase	Ch.14
	2/2	Cell growth: the core pathway	Ch.13 and 14
Unit2: Cell Behaviors			
5	**2/5**	**Exam1**	
	2/7	Cell signaling: receptors and transduction	Ch.16
	2/9	Cell signaling: receptors and transduction	Ch.16
6	2/12	Cell division	Ch.18
	2/14	Cell division and cell death	Ch.18
	2/16	Cell secretion: protein sorting	Ch.15
7	2/19	Cell secretion: endomembrane system	Ch.15
	2/21	Cell shape: intermediate filaments and microtubules	Ch.17
	2/23	Cell migration: actin filaments	Ch.17
Unit3: Genome Expression and Mutation			
8	**2/26**	**Exam 2**	
	2/28	Tissues, stem cells and cancer	Ch.20
	3/2	DNA and chromosomes	Ch.5
9	3/5	From DNA to RNA: transcription	Ch.7
	3/7	From RNA to Protein: translation	Ch.7
	3/9	Cell differentiation: regulation of gene expression	Ch.8
10	3/12	Cell Differentiation: regulation of gene expression	Ch.8
	3/14	Mutation: DNA replication	Ch.6
	3/16	Mutation: DNA repair and recombination	Ch.6
11	3/20	**Final Exam** 6:00-8:00 pm	

Recitations:

WB 205	(Sec: 010)	Tuesday	9:00 a.m. Dan Hayes: breyssed@oregonstate.edu
LINC 307	(Sec: 011)	Tuesday	4:00 p.m. Dan
GILM 234	(Sec: 012)	Wednesday	9:00 a.m. Dan
GILK 113	(Sec: 013)	Wednesday	1:00 p.m Dan
NASH 214	(Sec: 014)	Wednesday	4:00 p.m. Dan
LINC 368	(Sec: 015)	Friday	9:00 a.m. Dan

TA office hours:
Dan Hayes, ALS 2031, 9:00-10:00 am Monday or by appointment

Will Sato, to be updated soon

Recitation In-Class Group Problems and Assignments

There is 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 started in recitation, completed at home and due the following week. Assignments will be posted on Canvas.

Week	**In-Class Group Problem**	**Assignment**
R1	Nested Hierarchy	Nested Cubes (**15 pts**)
R2	Flow and Mechanism	Flow and Mechanism (**15 pts**)
R3	Focusing on an Interface	Propose an Interface to Engineer (**15 pts**)
R4	Having Fun with Mutation	**No Assignment**
R5	Signal Transduction	Signal Transduction Analogy (**10 pts**)
R6	Cell Cycle Checkpoints	Cell Cycle Sequence of Events (**10 pts**)
R7	Orientation of Proteins in the Endomembrane System	**No Assignment**
R8	Human Genome	Browsing the Human Genome (**15 pts**)
R9	Transcription and Translation	The Genetic Code (**15 pts**)
R10	Gene reporters	**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."