BIOS 2114

Wendy Schluchter

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Course description: This is an introductory course in Cell and Molecular Biology. We will learn a lot about the molecules that make up our cells, especially the "macromolecules" such as protein, DNA and RNA. We will spend a lot of time on how these molecules are synthesized (put together), and how they work. Topics covered in this course are very important for further work in biology, especially for people who are planning careers in the biomedical sciences. The course also lays the groundwork for understanding important social issues in biology, including genetic engineering, genetic testing, and personalized medicine. Prerequisites: BIOS 1083, 1081, CHEM 1017, 1018, 1007, 1008.


Clickers: I am requiring the use of the i>clicker 2 for this class (if you have an i>clicker 1, that will work also). You can purchase these online or at the bookstores. I will be using these to take attendance, to ask questions to prepare you for exams, and to poll the class on various issues. Please REGISTER your iClicker as soon as possible. Go to iclicker.com, click “register your iclicker” and follow the directions. Please bring your clicker to EVERY CLASS. I need this to be able to award your bonus points. You will get full credit for attendance of 80% of lecture days (click in at least once during 20 of the 25 lecture periods).

Course website: Throughout the course, I will post handouts, powerpoints, and lab information on Moodle. You are expected to access this site regularly. Your grades will be posted here.

Exams: Exams will consist of multiple choice and essay questions. There are four regular exams and a cumulative final (5 exams), and your lowest grade will be dropped. The final exam will be cumulative but is optional if you are happy with your grade on the first four exams.

Grade: Point total: 500
Tests: 400 possible points (top four out of 5 test scores, each worth 100 points)
Lab grade: 100 points
Clicker points: 12 "bonus" points for clicker responses (must click in 80% of lecture days)
Homework may be assigned/graded for more extra credit points.
Your grade will be calculated as a percentage of 500 points on a 10% point scale (e.g. 90% and above is A, 80-89% B, 70-79% C, 69-60% D, <59% F)

Accommodations for Students with Disabilities: It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.

Academic Integrity: Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at
Expectations of students: Students should arrive on time, with their i>clickers, prepared for lecture. Cell phones and pagers should be turned to vibrate. Students should have access to the internet for various assignments and postings on Moodle. I will also attempt to record my lectures and post on Moodle. Occasionally there might be a technology glitch that crashes the program I use to record the lectures. These recordings are not a substitute for class attendance.

Student Learning Goals: At the completion of this course, students should be able to:
1. Correctly recall and relate all factual material presented in class.
2. Draw and identify all organelles and parts of a cell and explain their functions.
3. List the molecules required to make cells and explain their composition and their function
4. Compare and contrast eukaryotic and prokaryotic cells
5. Understand research techniques used to study cells and molecules and be able to apply these research techniques to new research questions in cell and molecular biology posed by instructor
6. Explain the structure of DNA, understand how it replicates, how this process is controlled, and the consequences of mistakes that occur during replication.
7. Explain how transcription occurs, how this process is regulated, and the functions of the three types of RNA produced.
8. Explain how the molecules required for translation come together, how the sequence of mRNA results in the production of the appropriate protein, and how this process is regulated.
9. Explain the overall metabolism of cells, where these processes occur and how they are regulated
10. Explain how molecules are moved throughout the cell, how this process is regulated, and describe some diseases that can occur when mistakes happen in this process
11. Give examples of cell signaling, how this process is regulated and diseases that result when errors occur in this process.

Tentative Schedule of topics, readings and test days: Drop date is October 14!!!!

PART I: Class days: Aug 20, Aug 25, Aug 27, Sept 1, Sept 3, Sept 8, Sept 10 (Review)
TEST 1: Sept 15th.
Readings: Ch. 1, 2, 4, 11, parts of 3
Overview/remind of cellular molecules and how small molecules are connected to form polymers (proteins, RNA, DNA, carbohydrates and lipids), and how these larger molecules interact to form larger structures in the cell. Structure and some of the functions of biological membranes. Some general properties of enzyme-catalyzed reactions. Some concepts in enzymology and metabolism. Introduction to some of the methods used to study cells.

PART II. Class days: Sept 17, Sept 22, Sept 24; Sept 29, Oct 1;
TEST 2: October 8
Chapters 5, 7 and 8. Specific pages and additional information provided later. Fundamentals of Gene expression, including gene structure and organization; transcription; RNA processing; translation, regulation.

Drop date is October 14!!!!
TEST 3: November 3
Chapters 6, 10, and Specific pages and additional information provided later. DNA replication; Enzymes that act on DNA for replication, repair and recombination. Recombinant DNA technology.

PART IV. Class days: Nov 5, Nov 10; Nov 12, Nov 17, Nov 19, Nov 24, Thanksgiving break: Nov 26
TEST 4: December 1
Chapters 15, 13, 14, 17, 16. Specific pages and additional information provided later. Protein sorting and secretory system. Organelles, metabolism, photosynthesis, cytoskeleton, signaling.

Summary, Review for final exam: Dec 3.
FINAL EXAM: Dec 10, Thurs. 10 a.m. - noon. Comprehensive, but with careful guidance on important questions/ topics.
Lecture: T Th 9:30-10:45 AM, LA 140; Labs meet at the specified time in CC 206.

Instructor: Dr. Wendy Schluchter 232 Biology Bldg. phone: 280-7194 e-mail: wschluch@uno.edu
Office hours: Mon, 11-1 PM, Tues 1-3, Th 1-3
Lab instructor: Dr. Mary Clancy (mclancy@uno.edu)
Lab TAs: Kristina Farragut (kfarragu@uno.edu) and Achira Weerathunga (aweerath@uno.edu)
Undergraduate Supplemental Instructor: Rebecca Callaway: rcallawa@uno.edu
Assistance with lecture: Dr. Jack Horne; jhhorne@uno.edu

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