

## BIO 323: Introductory Molecular and Cell Biology Spring Semester 2011

**Lecturer:** Dr. Todd Kostman, HS 142,156, kostman@uwosh.edu

**Office hours:** Monday and Wednesday 10:20-12:20

**Lecture Hours:** 9:10-10:10 am, Halsey Science Center room 175

**Textbook:** Cell and Molecular Biology, 5<sup>th</sup> or 6<sup>th</sup> Edition by Gerald D. Karp

**Attendance Policy:** All students must attend every lecture. I firmly believe that what I say is important (because I am so cool and knowledgeable); important enough to hear in person. Lecture outlines are posted on D2L but they are missing key information that you have to come to class to get. Plus if you are not in class you will miss the quiz points, and these quiz points could have either a significant positive or negative effect upon your grade. In summary, the easiest thing to do is come to class.

**Introductory Molecular and Cell Biology and Promoting the Liberal Arts:** A liberal arts education refers to studies in a college or university intended to provide general knowledge and develop intellectual capacities. A liberal arts education prepares students for a variety of careers. This is different from other types of education where students develop professional or vocational skills for a specific job. The Biology, Microbiology and Medical Technology Majors are offered at UW-Oshkosh within the College of Letters and Science (COLS). The COLS emphasizes a liberal arts education. It promotes a liberal arts education model proposed by Carol Geary Schneider, president of the Association of American Colleges and Universities since 1998. Schneider stresses the idea that **ALL students receive an education of lasting value, relevant for the 21st century**. In her model learning should be: 1) "analytical, contextual and holistic thinking;" 2) "effective communication using multiple forms of expression;" 3) "critical reflection/informed action as citizens, producers, human beings;" 4) "ethical action for local and global communities;" and 5) "integrative learning."

At UW-Oshkosh, you will have a broad exposure to the liberal arts, while focusing on a topic that you are particularly interested in such as a biology or microbiology. BIO 323 (Introductory Molecular and Cellular Biology) is core course within all three of the aforementioned majors. The unifying theme in this course is **the oneness of all earthly life forms**, attesting to their common evolutionary origin. As described in the COLS learning objectives, in addition to studying the factual content of the science, we will also consider its historical development, experimental basis, and relationship to other aspects of science and society.

**Use of Electronic Devices in Class:** In order to protect and foster the proper learning environment, the use of cell phones is not allowed in lecture. That includes sending or receiving voice or text messages, or even checking to see if new calls/messages have come in. Please turn your phone off at the start of class to prevent interruptions from incoming calls. Wireless laptop computers are allowed, but only if their use is limited to activities directly related to course performance such as taking notes or looking up content on the web. Use of portable music devices is not allowed in lecture at any time. Use of any electronic device during an exam will result in an automatic zero for that exam.

**Academic Misconduct:** Students are referred to the University of Wisconsin Oshkosh Student Discipline Code as detailed in Specific provisions of Chapter 14 of the State of Wisconsin Administrative Code. Any student(s) found in violation of any aspect of the above Code (as defined in sections UWS 14.02 and 14.03) will receive a sanction as detailed in UWS 14.05 and 14.06. Sanctions range from an oral reprimand to expulsion from the University of Wisconsin-Oshkosh. Students have the right to request a hearing and to appeal sanctions (as defined in UWS 14.08-14.10).

**Students with Disabilities:** Students with disabilities should contact the instructor in the first week of class in order to arrange all possible accommodations.

**Grading:** Grades will be based upon performance on four lecture exams (100 pts. each) and ten 10-point quizzes to be given at random times during both the course. Grading Scale: 93-100%=A, 90-92%=A-, 87-89%=B+, 83-86%=B, 80-82%=B-, 77-79%=C+, 73-76%=C, 70-72%=C-, 67-69%=C-, 67-69%=D+, 63-66%=D, 60-62%=D-, below 60%=F. Grades will be calculated by dividing the total number of points earned by the total points possible (500).

**Make Up Exams:** If a student is not able to attend an exam, it is his/her responsibility to contact Dr. Kostman **before** the scheduled exam time. Make-up exams will only be given to **students suffering from a life-threatening illness and having a written medical excuse to support that claim**. Students will also need an excused absence to receive permission to make up a missed quiz.

**Use of Campbell et al.:** In this class, probably more than any other, the content you learned in Biology 105 is of critical importance. For this reason, we have indicated which Campbell chapters correspond to the individual Karp chapters so you can review the information you learned in Bio 105. Two copies of Campbell are on reserve in the Halsey Resource Center (room HS259).

**Tentative Lecture Schedule:** (subject to change at discretion of instructor)

Lect	Date:	Topic	Karp chapter	Campbell
1	Jan. 31	Syllabus, Introduction to course, pre-test	*	*
2	Feb 2	Basic Chemistry	2.4-2.5	2
3	Feb 4	Molecules-Proteins and Protein Structure	2.5-2.6	3
4	Feb. 7	Molecules-DNA and RNA	2.5, 2.6, 10.3	10
5	Feb. 9	Chromosomes: Structure and Research history	10.2, 10.4	8.12-8.13
6	Feb. 11	Genome and genome analysis	10.5-10.6	12.17-12.19
7	Feb. 14	Gene expression and transcription	11.1-11.2	11.1-11.4
8	Feb. 16	RNA and RNA processing	11.3-11.5	11.5-11.7
9	Feb. 18	RNA and RNA processing	11.3-11.5	10.6-10.14
10	Feb. 21	The genetic code and translation	11.6-11.8	11.9
*	Feb. 23	Review for Exam	*	*
<b>EX 1</b>	<b>Feb. 25</b>	<b>Exam 1 (Lectures 2-10)</b>	*	*
11	Feb. 28	Gene expression: prokaryotes vs. eukaryotes	12.1-12.3	11.1-11.3
12	March 2	Transcriptional control and processing	12.4-12.5	11.5
13	March 4	Transcriptional control and processing	12.4-12.5	11.5-11.9
14	March 7	Translational and post-translational control	12.6-12.7	11.8-11.9
15	March 9	DNA Replication and repair	13	10.4-10.5
16	March 11	DNA Replication and repair	13	10.4-10.5
17	March 14	Cellular reproduction: Cell cycle and mitosis	14.1-14.2	8.4-8.11
18	March 16	Cellular reproduction: meiosis	14.3	8.12-8.18
<b>EX 2</b>	<b>March 18</b>	<b>Exam 2 (Lectures 11-18)</b>	*	*
*	March 21-	Spring Break ☺		
19	March 28	Introduction: What is a Cell? Prokaryotic vs. Eukaryotic Cells	1.1-1.3	4
20	March 30	Enzymes and Metabolism	3.2-3.3	5.14-5.16
21	April 1	Membranes I: Plasma membrane structure	4.1-4.3	4.5, 5.1-5.3
22	April 4	Membranes II: Membrane proteins and fluidity	4.4-4.6	5.1, 3.8
23	April 6	Membranes III: Transport and nerve impulse transmission	4.7-4.8	none
24	April 8	Endomembrane system	8.1-8.2	4.8-4.11
25	April 11	ER, Golgi, and vesicular transport	8.3-8.5	4.9-4.11, 5.9
26	April 13	Lysosomes, endocytosis and post-translational uptake	8.6, 8.8-8.9	4.11, 5.9
*	April 15	Review for Exam	*	*
<b>EX 3</b>	<b>April 18</b>	<b>Exam 3 (Lectures 19-26)</b>	*	*
27	April 20	Cytoskeleton, microtubules	9.1-9.3	4.17-4.19
28	April 22	Intermediate and Microfilaments	9.4-9.5	4.17-4.19
29	April 25	Muscle contraction and non-muscle motility	9.6-9.7	none
30	April 27	Cell signaling	15.1-15.2	11.12-11.13
31	April 29	G-protein and protein tyrosine mechanisms	15.3-15.4	none
32	May 2	Calcium, convergence and cross-talk	15.5-15.6	none
33	May 4	Programmed cell death	15.7-15.8	none
34	May 6	Cancer	16.1-16.3	11.16-11.20
*	May 9	Course Wrap-up and Review	*	*
<b>EX 4</b>	<b>May 11</b>	<b>Lectures (27-34)</b>	*	*
<b>EX 4</b>	<b>May 13</b>	<b>Lectur(27-34)</b>	*	*