

**MOLB 3000**

**Introduction to Molecular Biology**

**Spring 2013**

TR 11:00 AM -12:15 PM

AB Rm. 103

**Instructor:** Kurt Miller, Ph.D.  
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Office Hrs: Monday 2-4 PM & by appointment

**Prerequisite Coursework:** MOLB/MICR 2021 or LIFE 2022 or 2023, and CHEM 2300 or 2420 or concurrent enrollment.

**Course Website:** Lecture slides, problem set solutions, and other information will be posted at the MOLB 3000 course website. The website can be accessed at <http://www.uwyo.edu/molecbio/courses/molb-3000/index.html>.

**Required Textbook:** The required textbook is *Molecular Cell Biology* by Lodish, *et al.* 7th edition, 2013, W. H. Freeman and Company. The text is available for purchase at the Campus Bookstore.

**Lecture Schedule:** The lectures will closely follow the schedule listed below. You are strongly advised to have completed textbook reading assignments and reviewed lecture slides prior to coming to class. While attendance of lectures is not mandatory, it is strongly recommended. No classes will be held March 19th & 21st (Spring Break).

**Exams:** There will be 4 exams in the course. The first 3 exams will be held during regularly scheduled lecture periods. The 4th test is scheduled during finals week, but is not cumulative. Exam dates and chapters covered are listed below. Note that exam dates will not be changed unless the University is closed due to inclement weather. Students requesting special accommodations for testing should see me by no later than 1 week prior to the first exam.

<b>Test</b>	<b>Date</b>	<b>Coverage</b>	<b>Points</b>
<b>Exam I</b>	<b>Tuesday, Feb. 12</b>	<b>Chaps. 2, 3, 4</b>	<b>110</b>
<b>Exam II</b>	<b>Thursday, Mar. 7</b>	<b>Chaps. 5, 6</b>	<b>90</b>
<b>Exam III</b>	<b>Thursday, Apr. 11</b>	<b>Chaps. 7, 8, 15</b>	<b>110</b>
<b>Exam IV</b>	<b>Thursday, May 9</b>	<b>Chaps. 16, 19, 21, 24</b>	<b>90</b>

Exam IV is scheduled from 10:15 - 11:30 AM on Thursday, May 9. The room assignment for Exam IV will be announced in class.

**Exam Questions:** Exams will contain a mixture (typically 80%/20%) of multiple choice and short answer questions. You are responsible for all material covered in reading assignments and in class.

**Makeup Exams:** Makeup exams will be allowed only if you have an official excuse for your absence such as obtained from the Office of Student Life, Knight Hall. Those who do not have an official excuse for missing an exam risk receiving a score of 0% for that exam.

**Grading Policy:** Your percentage score for the course will be calculated on the basis of 400 total pts. Percentage scores will be rounded to the next higher whole number for decimals  $\geq 0.5$ , and to the next lower whole number for decimals  $< 0.5$ . Your grade for the course then will be determined using the following scale:

**A: 100-90    B: 89-80    C: 79-70    D: 69-60    F:  $\leq 59$**

Note, that no "extra credit" assignments are allowed under any circumstances. Academic dishonesty will not be tolerated.

**Bonus Points:** Each exam will contain 2 bonus questions worth 2 points each. Bonus points will be added to your raw score before determining your percentage score for the exam.

**Semester Deadlines.** Please consult the 2013 Spring Class Schedule for important University dates and deadlines. It is your responsibility to initiate paperwork for Drop/Add, Course Withdrawal, etc. well before deadlines.

**Lecture Schedule & Topics:**

Class	Date	Topics	Reading*
1	Jan. 15	Course introduction	None
2	Jan. 17	Chemical bonding, intro to biomolecules	Chap. 2
3	Jan. 22	Chemical equilibrium, pH/pK & buffers, bioenergetics	Chap. 2
4	Jan. 24	Protein structure & folding	Chap. 3
5	Jan. 29	Enzymes & regulation, nucleic acid structure	Chap. 3 / Chap. 4
6	Jan. 31	Intro to transcription & gene regulation	Chap. 4
7	Feb. 5	Translation, DNA replication	Chap. 4
8	Feb. 7	Review & Problem Session	
<b>9</b>	<b>Feb. 12</b>	<b>Exam I (Chaps. 2, 3, 4),</b>	
10	Feb. 14	Genetic analysis of mutations, recombinant DNA methods	Chap. 5
11	Feb. 19	Recombinant DNA methods	Chap. 5
12	Feb. 21	Gene inactivation, mutant gene identification	Chap. 5
13	Feb. 26	Transcription units, classes of genomic DNA, genomics,	Chap. 6
14	Feb. 28	Chromatin, chromosome structure	Chap. 6
15	Mar. 5	Review & Problem Session	
<b>16</b>	<b>Mar. 7</b>	<b>Exam II (Chaps. 5, 6)</b>	
17	Mar. 12	RNA polymerases, DNA control elements	Chap. 7
18	Mar. 14	Transcription factors, initiation by RNA Pol II	Chap. 7
		<b>SPRING BREAK</b>	
19	Mar. 26	Chromatin structure & gene expression, mRNA processing & splicing	Chap. 7 / Chap. 8

20	Mar. 28	Regulation of mRNA splicing, post-transcriptional regulation of gene expression	Chap. 8
21	Apr. 2	Overview of signal transduction, G-protein coupled receptor signaling	Chap. 15
22	Apr. 4	Rhodopsin & vision, other signal transduction pathways	Chap. 15
23	Apr. 9	Review & Problem Session	
<b>24</b>	<b>Apr. 11</b>	<b>Exam III (Chaps. 7, 8, 15)</b>	
25	Apr. 16	TGF $\beta$ signaling, receptor tyrosine kinases & Ras-Map kinase signaling, protein kinase B signaling	Chap. 16
26	Apr. 18	Intro to the cell cycle, cyclin-CDKs	Chap. 19
27	Apr. 23	Cell cycle regulation, stem cells & cell lineages	Chap. 19 / Chap. 21
28	Apr. 25	Apoptosis, intro to cancer & tumor cells	Chap. 21 / Chap. 24
29	Apr. 30	Oncogenes & oncoproteins, tumor suppressor genes, loss of growth inhibition & cell cycle control in cancer	Chap. 24
30	May 2	Review & Problem Session	
<b>31</b>	<b>May 9</b>	<b>Exam IV (Chaps. 16, 19, 21, 24)</b>	

\* Reading and problem assignments will be announced in class prior to each lecture.