

INTRODUCTION TO NUCLEIC ACIDS AND PROTEINS
BMS 601
Fall 2015

COURSE POLICY

Course Director:

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Required Textbooks

Lehninger Principles of Biochemistry, 6th Edition, Nelson and Cox, W.H. Freeman and Company, New York, 2013.

Molecular Cell Biology, 7th Edition, Lodish et al., W.H. Freeman and Company, New York, 2012.

Textbooks are available at the Marshall University Bookstore. There are companion websites at <http://bcs.whfreeman.com/lehninger> and <http://bcs.whfreeman.com/lodish7e>.

Classes

BMS 601 is a 3 credit hour course. Classes will be held from 1:00 - 2:50 PM on Mondays, Wednesdays and Fridays in Room 102 at the Biotechnology Science Center (BSC). While not required, attendance at all classes is strongly recommended. There is a possibility that there will be changes in the course schedule. You will be notified in advance if any changes occur.

Examinations

Three examinations will be given in this course, each during regularly scheduled class time. Only under **truly exceptional circumstances** will a student be permitted to take an examination at a time other than during the scheduled examination period. Exceptional circumstances include: death or serious illness in the immediate family, childbirth, illness requiring hospitalization and illness serious enough to warrant a written dispensation from a physician. Minor illnesses are **NOT** exceptional circumstances. A written doctor's excuse stating the nature of the illness will be required. If arrangements have not been made beforehand, the student **MUST** contact the course director within 24 hours after the scheduled exam period to discuss rescheduling the exam.

The format of each exam will consist of 50% multiple-choice and 50% of one or more of the following – essay, fill-in-the-blank, matching and short answer.

There will be available on MUOnline quizzes consisting of 2-3 short multiple-choice questions on each week's material to help in learning.

Homework

There will homework assignments throughout the course for a total of **40 points**.

Grades

Student performance is based on the scores achieved on three block exams and the homework. There is no cumulative final. The block exams will be based on 10 points/lecture. There are 36 lectures in the course. The point totals for each exam are as follows.

Exam 1	12 lectures	120 points
Exam 2	12 lectures	120 points
Exam 3	12 lectures	120 points
	36 lectures	360 points

Grades are calculated on a straight percentage scale, based on a total of **400 points (exams = 360 points, homework = 40 points)**. Final letter grades will be assigned as follows based upon the average percentage obtained on the three exams and the homework assignments. Grades will be posted on MUOnline as soon as reasonably possible after each exam.

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

Class Policies

By enrolling in this course, you agree to abide by the University policies listed below. Please read the full text of each policy by going to <http://www.marshall.edu/academic-affairs> and clicking on "Marshall University Policies".

Academic Dishonesty

Academic dishonesty will not be tolerated. Policy AA-12 defines academic dishonesty and describes the sanctions associated with it.

Inclement Weather

Policy GA-9 describes the policy on weather-related and/or emergency closings and delays. As this is an afternoon class, we will not be affected by delays. To find out if the University is closed, please call Audix at 696-6245.

Students with Disabilities Policy

Students with disabilities are required to prepare a notice either from the Help Center, Myers Hall, or Sandra Clements, PH 117, before a special accommodation can be honored. The link describing this policy is <http://www.marshall.edu/disabled>.

University Computing Services Acceptable Use Policy

MUBOG Policy IT-1 explains this policy (<http://www.marshall.edu/president/board/policies.html>).

Cell Phone Use

Cell phone use, including texting, will not be tolerated in the class, unless authorized by the instructor. If special circumstances exist such that a student needs to be in communication with family members or friends during a class, please inform the instructor before the class begins. Permission will be granted on a case-by-case basis and at the sole discretion of the instructor. If a student persists in using cell phones, including texting, after they have been asked to stop, the student will be removed from the class.

Course Objectives

After completing this course, students should have a thorough understanding of the biochemistry, metabolism and structure of cells, and the molecular mechanisms that determine the function of cells. The student should be able to describe:

- 1) How the chemistry of pH is determined and how buffers are used.
- 2) The chemistry of amino acids and proteins and the structure of proteins.
- 3) How enzymes function.
- 4) The structure of DNA and how it is replicated and repaired in cells.
- 5) How expression of genes is regulated.
- 6) How proteins are translated, processed and modified.
- 7) Basic techniques for studying DNA, RNA, and proteins.

Student Learning Outcomes	How Outcome Will Be Practice	How Outcome Will Be Assessed
Know how to measure pH and use buffers correctly.	In-class discussion, Online quizzes	Exam questions, Homework
Know the chemistry of amino acids and the structure of proteins.	In-class discussion, Online quizzes	Exam questions, Homework
Know the structure and function of enzymes.	In-class discussion, Online quizzes	Exam questions, Homework
Know the structure of nucleotides and DNA.	In-class discussion, Online quizzes	Exam questions, Homework
Know how DNA is replicated and repaired.	In-class discussion, Online quizzes	Exam questions, Homework
Know how gene expression is regulated.	In-class discussion, Online quizzes	Exam questions, Homework
Know how proteins are translated, processed, and modified.	In-class discussion, Online quizzes	Exam questions, Homework
Analyze and assess basic techniques for studying DNA, RNA, and protein.	In-class discussion, Online quizzes	Exam questions, Homework

BMS 601 2015 LECTURE SCHEDULE
MWF 1:00 – 2:50 PM

			CHEMICAL & MOLECULAR FOUNDATIONS	
1	Monday	August 24	Molecules of Life	
2			pH	
3	Wednesday	August 26	Bioenergetics 1	
4			Bioenergetics 2	
5	Friday	August 28	Amino Acid & Protein Chemistry 1	
6			Amino Acid & Protein Chemistry 2	
7	Monday	August 31	Amino Acid & Protein Chemistry 3	
8			Enzymes 1	
9	Wednesday	September 2	How to Read a Research paper	
10			Bioinformatics - PubMed	
11	Friday	September 4	Enzymes 2	
12			Enzymes 3	
	Monday	September 7	LABOR DAY HOLIDAY	
13	Wednesday	September 9	Enzymes 4	
14			Enzymes 5	
			GENETICS & MOLECULAR BIOLOGY	
15	Friday	September 11	Nucleotides and Nucleic Acids	
16			Nucleotide Metabolism	
	Monday	September 14	EXAM 1 (Lectures 1-12)	
17	Wednesday	September 16	DNA Structure	
18			DNA Replication	
19	Friday	September 18	DNA Repair	
20			DNA Techniques - preps, quantitation	
21	Monday	September 21	RNA Synthesis & Prokaryotic Transcription	
22			Eukaryotic Transcription Initiation Control	
23	Wednesday	September 23	Eukaryotic Transcription Factors	
24			RNA Processing	

25	Friday	September 25	Nucleus - structure and transport	
26			RNA Techniques - preps, northern	
27	Monday	September 28	Epigenetics	
28			Non-coding RNAs	
	Wednesday	September 30	EXAM 2 (Lectures 13-24)	
29	Friday	October 2	PCR	
30			Real-time PCR	
31	Monday	October 5	Translation	
32			Translation	
33	Wednesday	October 7	Protein Modification and Degradation	
34			Protein Chaperones	
35	Friday	October 9	Protein techniques - westerns	
36			Immunological techniques - ELISAs	
	Monday	October 12	EXAM 3 (Lectures 25-36)	