

# CHEMISTRY 345 - Spring 2010

Dr. Judy Levin

HS222, 337-6525; Office hours by appointment

- Course text: Nelson, D.L. and Cox, M.M., Lehninger Principles of Biochemistry (5<sup>th</sup> ed., W.H. Freeman and Co., 2008) and additional readings as assigned in class
- Recommended: Sinden, R., DNA Structure and Function, Academic Press (1994)  
Kornberg, A., For the Love of Enzymes, Harvard University Press (1989) (*these two books will be on reserve in the library*)

**Note:** The schedule below is meant to give you an overview of the organization of the course and the general *approximate* order in which we will cover chapters in Lehninger. Specific reading assignments will be given to accompany each lecture (posted on Blackboard with the accompanying PowerPoint presentations), and may include sections from other chapters taken out of order!

<u>DATE</u>	<u>TOPIC</u>	<u>LEHNINGER CHAPTER</u>
Jan.29 – Feb.10	Nucleic Acid Structure and Chemistry	8
Feb.12 – 19	DNA Topology & Packaging	24
Feb. 22	EXAM I	
Feb.24 – Mar.3	DNA Replication	25
Mar.5 – 8	DNA Repair	”
Mar.10 – 12	DNA Recombination	”
Mar.13 – 21	SPRING BREAK	
Mar.22	Review	
Mar.24	EXAM II	
Mar.26	GUEST LECTURE: Dr. Michael Brenowitz	
Mar.29 – Apr.7	Transcription & RNA Processing	26
Apr.9 – 12	Gene Regulation	28
Apr.14	EXAM III	
Apr.16 – May 3	Protein Synthesis	27
May 5	WRAP-UP	

## Course Goals

- 1) Become familiar with the chemical and physical properties of nucleic acids and how these properties explain and allow their functions
- 2) Become familiar at a molecular level with the enzymes, proteins and macromolecular assemblies that carry out the maintenance, replication and expression of genetic information
- 3) Recognize and understand conceptual themes that emerge in the consideration of the above body of information
- 4) Gain a historical perspective of the scientific processes that led to our understanding of the above information and concepts. (Classic experiments, knowledge at the time, reception by the scientific community.)
- 5) Appreciate the synergistic relationship between basic research and biotechnology.
- 6) Develop ability to comprehend and critique current (or recent) primary literature related to the “textbook” knowledge learned in the course

## Homework and In-Class Assignments

Early in the semester (prior to the first exam) there will be two workshops designed to help you with some key concepts in DNA chemistry and topology. Time-permitting, these will be completed during class time. You will work in groups during class and complete the remainder of the workshop outside of class as necessary. You will each submit your own completed copy of the workshop. The workshops will count for 5% (total) of your grade in the course.

Twice during the semester there will be a written homework assignment involving data interpretation or design of experimental approaches to answer posed questions, or answering questions relevant to a journal article. Each of these assignments will count for 5% of your grade in the course (for 10% total) and you will be given approximately one week to complete each of them.

## Exams

There will be three midterm exams consisting of short and medium answer questions and problems. Each exam will focus on material covered since the previous exam, but may expect you to utilize or apply knowledge covered on previous exams. The lowest of your three midterm grades will be given half the weight of your other two midterms, and together the midterms will count for 50% of your grade. The final exam will be closed book; approximately half of the final will relate to material subsequent to the third midterm, while the remaining ~half will be comprehensive.

## Grading

Midterm exams (2 @ 20%, 1 @ 10%)	50 %
Workshops (2 @ 2.5%)	5 %
Homeworks (2 @ 5%)	10 %
Participation	5 %
<u>Final Exam</u>	<u>30%</u>
Total	100 %

**Reminder:** All students are bound by the standards of the Academic Honor Code, found at <http://www.goucher.edu/documents/General/AcademicHonorCode.pdf>