

CHEMISTRY 341 - Fall 2009

Dr. Judy Levin, HS222, 337-6525; Office hours by appointment

Course text: Nelson, D.L. and Cox, M.M., Lehninger Principles of Biochemistry (5th ed., W.H. Freeman and Co., 2008) and additional readings as assigned in class

<u>DATE</u>	<u>TOPIC</u>	<u>READING</u>
Sept.2	Introduction	Chapters 1 & 2
Sept.4	Proteins: Composition and Primary Structure	Chapter 3
Sept.9	Proteins: 3D Structure	Chapter 4
Sept.11,14	Protein Function: Ligand Binding	Chapter 5 (pp. 153-170 only)
Sept.16	LITERATURE & HUMAN RELEVANCE	TBA
Sept.18	Workshop/Review	
Sept.21	EXAM I	
Sept.23,25,28	Enzymes	Chapter 6
Sept.30	Carbohydrates	Chapter 7 (pp. 235-252 only)
Oct. 2	Lipids & Membranes	Chapter 10 (pp. 343-357 only) Chapter 11 (pp.371-396 only)
Oct.5	LITERATURE & HUMAN RELEVANCE	TBA
Oct.7	Workshop/Review	
Oct.9	EXAM II	
Oct.12,14	Bioenergetics: Concepts	Chapter 13
Oct.16,21	Metabolism of Glucose	Chapter 14
Oct.23,26	Metabolic Regulation	Chapter 15
Oct.28	LITERATURE & HUMAN RELEVANCE	TBA
Oct.30	Workshop/Review	
Nov.2	EXAM III	
Nov.4,6	Citric Acid Cycle	Chapter 16
Nov.9,11,13	Oxidative Phosphorylation	Chapter 19 (pp. 707-738 only)
Nov.16	Fatty Acid Catabolism	Chapter 17
Nov.18	LITERATURE & HUMAN RELEVANCE	TBA
Nov.20	Workshop/Review	
Nov.23	EXAM IV	
Nov.25 – 29	THANKSGIVING BREAK	
Nov.30, Dec.2	Lipid Biosynthesis	Chapter 21
Dec.4,7	Amino Acid Catabolism	Chapter 18
Dec.9	Wrap-Up	

Course Goals

- 1) Become familiar with the chemical and physical properties of proteins and how these properties explain and allow their functions
- 2) Recognize and understand conceptual themes in enzymatic catalysis and how the study of enzyme kinetics aids in the elucidation of enzyme properties and mechanisms.
- 3) Understand the metabolic pathways used by cells to harvest energy and to interconvert important biomolecules, and the regulation of these pathways
- 4) Appreciate the synergistic relationship between basic research and biotechnology.
- 5) Develop ability to comprehend, critique and present current (or recent) primary literature related to the “textbook” knowledge learned in the course

Homework and In-Class Assignments

There will be either a problem set or an in-class workshop associated with each study unit (i.e., prior to each midterm exam. These assignments will not be graded; however, it is to your benefit to do them and understand them, as similar questions or problems will appear on the exams.

Twice during the semester there will be a written assignment that will involve data analysis and will apply concepts learned in class. Each of these assignments will be worth 20 points and you will be given approximately one week to complete it.

Exams

Midterm exams will be worth 100 points each and will consist 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 four midterm grades will be given half the weight of your other three midterms. The final exam (180 pts) will be closed book; approximately 60 pts. of the final will relate to material subsequent to the third midterm, while the remaining 120 pts. will be comprehensive.

Literature & Human Relevance (October 5, October 28, November 18)

At the end of each chapter of your text, there are references given for further reading. You will work in groups of 2 or 3 students and will select one of the suggested review articles. Your job will be to teach the class about this topic. Your presentation should include the description of at least one scientific experiment or study cited in the review article, and an attempt should be made to find what research has been done in the field since the publication of the review article. The entire class will be expected to read the review article prior to the presentation and be prepared to discuss and/or ask questions. The presentation will be limited to 20 minutes (2 groups per class period). Each presenter will receive a grade on the basis of scientific content and rigor (10 pts.), speaking style (5 pts.), and the use of visual aids (e.g. PowerPoint) (5 pts.). Questions relating to these presentations may appear on the final exam! Each student will also receive a grade (10 pts. possible) reflecting his/her audience participation (during these presentations as well as during other class periods) over the course of the semester. Part of this participation grade may come from short in-class quizzes designed to confirm that students have done the assigned reading and are prepared to discuss it.

Grading

Midterm exams	350 pts (58%)
Data analysis	40 pts (6.7%)
Presentation	20 pts (3.3%)
Participation	10 pts (1.7%)
<u>Final Exam</u>	<u>180 pts (30%)</u>
Total	600 pts