

Biochemistry: Introduction to Structure, Enzymes, and Metabolism

Chemistry XL-153A
Registration number: U4433
Number of units: 4

Instructor: Dr. Peter A. Doucette

Dates: 6/23/2009-9/8/2009

Days/Time/Location: Tuesdays, 7:00-10:00 pm, CS-76 (Young Hall)

Course Description:

This is the first course in a three-quarter series that also includes XL-153B and XL-153C. This course covers structure of proteins, carbohydrates, and lipids; enzyme catalysis and principles of metabolism, including glycolysis, citric acid cycle, and oxidative phosphorylation.

Goals & Learning Objectives:

The student will be able to describe the function of the major classes of biological molecules and draw their structures; apply fundamental chemical concepts such as acid-base equilibrium, kinetics and thermodynamics to biochemical systems; and understand the core metabolic processes: glycolysis, the citric acid cycle, and oxidative phosphorylation.

Course prerequisites:

A background that includes general chemistry, general biology, and organic chemistry is important and very helpful for this course. I will review basic concepts, but you should be prepared to do extra work if you are deficient in any of these three areas. College level math skills are also requisite.

Required Materials:

Textbook: Biochemistry, 3rd Edition, Voet & Voet, ©2004 (ISBN 978-0-471-19350-0)

(Stryer, *Biochemistry* 4th "red" edition, or Lehninger, *Biochemistry* 3rd, 4th, or 5th editions are also acceptable for this course and can be found online)

Scientific Calculator: should have logarithms and exponents

UCLA Extension Contact for this Course:

Regina Marinas; Phone: (310) 825-7093, Fax: (310) 206-5066, Email: rmarinas@uclaextension.edu

Student Records:

Students can access and update student records online by visiting: www.uclaextension.edu and clicking on My.Extension on the left navigation bar, selecting Student's Course Essentials, and following the directions to log in.

Student's Course Essentials lets you view your grades, request an official transcript, change credit status on a current course, obtain enrollment verification, update your personal information, and much more.

Student Conduct:

By enrolling in this course, all students are expected to have reviewed the Student Conduct and Sexual Harassment information provided in the current Quarterly catalog (print or online) under "General Information."

Accommodations:

If you need any accommodations for a disability, please contact the UCLA Extension Disabled Student Services at: (310) 825-7851 or via e-mail access@uclaextension.edu

Grading:

Course grades will be based on the following:

2 Midterms	(100 points each)	200
Final Exam	(150 points)	150
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Total Possible	(tentative)	350

Letter grades are given based on the percentage of total points.

A	100 - 90%
B	89 - 80%
C	79 - 65%
D	64 - 52%
F	51 - 0%

All grades are final when filed by the instructor on the Final Grade Report.

Lectures:

Course material will be presented primarily on an overhead projector. The overheads will be available at the following website: www.chem.ucla.edu/~pdoucett/153. You can print these out and bring them to class so you can make additional notes in the margins. This will hopefully allow you to think and participate (not sleep!) during lectures. To print documents, first save them on your hard drive - *do not print from the web!*

Exams:

Exams will be given on scheduled days in room CS76. The format of the exam depends on the content of the material being tested, but is usually made up of multiple choice, true/false and free response drawing questions. There will be no make-up exams. If you miss an exam, you will receive a zero unless you give a documented reason for missing the exam. Because your grade is based solely on the three exams, it is important to do your best on every exam.

Study Strategies:

The best strategy for this course is to study often. Studying one hour every day is much better than studying 7 hours on the weekend. In addition to understanding the lecture material, you should learn to draw the structures of every molecule we encounter (unless I specify that you don't have to). Learning to draw the structures of molecules in biochemistry is an essential part of the course and you should practice drawing structures whenever possible (periodically making sure that the structures are correct!). Practice problems will be given whenever possible and you should complete and understand all questions.

Tentative Lecture and Exam Schedule:

Week	Date	Day	Topics
1	6/23	T	Introduction, molecular interactions, water and introduction to proteins
2	6/30	T	Structures of proteins, protein purification
3	7/7	T	Carbohydrates, lipids
4	7/14	T	Midterm 1
5	7/21	T	Hemoglobin and myoglobin, biochemical thermodynamics
6	7/28	T	Biochemical thermodynamics (continued)
7	8/4	T	Enzyme kinetics, enzymatic catalysis
8	8/11	T	Midterm 2
9	8/18	T	Introduction to metabolism, glycolysis
10	8/25	T	The citric acid cycle
11	9/1	T	Electron transport chain/oxidative phosphorylation
12	9/8	T	Final Exam

It is estimated students will spend approximately 6 hours outside class each week completing class assignments, readings and studying for exams.

Course Syllabus Subject to Update by the Instructor