

Biochemistry (Chem/Biol 361) Fall 2009

Dr. David Butler

MWF 10:30-11:30 SCI 104

Office hours: Rm. 137 Science Hall

MWF 2:30-3:00

(or by appointment)

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Course Emphasis: This course will emphasize the biochemical processes that occur in living organisms. We will examine the properties of biological macromolecules and relate their structure to their observable properties and functions. A major portion of this course will explore how living organisms acquire energy and transform energy into readily usable forms via metabolism. The course will utilize an integrated approach and relate chemical events to molecular physiology and medically relevant topics.

Course Goals:

1) Develop an interest in biochemistry

This topic is a fascinating one to teach and to learn. It is of interest to both basic scientists from chemistry and biology backgrounds, and to those interested in technological applications. Full appreciation of biochemistry requires an investment of time and active participation in the learning process; questions are encouraged and preparation for in-class discussions is expected.

2) Attaining literacy in biochemical concepts appropriate for molecular life scientists

Successful completion of this course will enable success in medical or graduate biochemistry courses, and will allow assimilation of advanced concepts from contemporary biochemical research literature.

Assessment and Grading:

There will be five exams in this course (see below for the schedule). Each exam is worth 100 points. I will throw out your lowest score from the first four exams. **The final exam, which is comprehensive, will count for everyone--NO EXCEPTIONS.** Letter grades will be assigned as follows: Four exams @ 100 points each, for a total of 400 points in the course.

A = 360-400 (90-100%)

B = 320-359 (80-89%)

C = 280-319 (70-79%)

D = 240-279 (60-69%)

F = 239 or less (0- 59%)

I reserve the right to use “-“ and/or “+” grades as I deem appropriate.

Text:

Biochemistry; Sixth Edition, Freeman Publishing, by Berg, Tymoczko and Stryer, 2007.

There may be additional readings from the primary literature. I will make these articles available over the web.

Tentative topics to be covered in Biol/Chem 361

<u>Topics</u>	<u>Text Chapters</u>
Chemical Foundations	1.1, 1.3
Protein Structure	2
Hemoglobin	7
Enzymes	8, 9.1, 9.3, 9.4, 10.1, 10.3
Enzyme kinetics	
Catalytic strategies	
Regulation of enzyme activity	
RNA-based catalysis	
Carbohydrates	11.1, 11.2
Lipids and Membranes	12.1, 12.2, 12.3, 12.4, 26.1
Introduction to Metabolism	15
Glycolysis	16.1, 16.2, 16.3
Krebs Cycle	17.1, 17.2, 17.3, 17.4
Oxidative Phosphorylation	18
Glycogen Metabolism	21.1, 21.2, 21.3
Lipid Metabolism	22.1, 22.2, 22.5, 26.2, 26.3, 26.4
Amino Acid Metabolism	23
Integration of Metabolism	27

Note: I may add or delete topics and/or readings as we go through the course.

Tentative Exam Schedule:

<u>Date</u>	<u>Exam</u>
Oct. 2	Exam # 1
Oct. 23	Exam # 2
Nov. 16	Exam # 3
Dec. 11	Exam # 4
Dec. 14	Comprehensive Final Exam

Classroom Etiquette: Please, no social talking with neighbors during class. Please turn off your cell phone before coming to class. In general, be respectful of your fellow classmate's right to learn. Ask lots of questions!

Academic Honesty: All students are expected to adhere to the highest standards of academic honesty and to refrain from any actions that are dishonorable or unethical. In all exams, papers, etc., you are expected to turn in your own work entirely. Cheating or aiding another in cheating in any manner will result in a grade of "F" for the class.