

BIO 3513 BIOCHEMISTRY

Fall 2007 Sec 901 CRN 10946

T,Th 2:00 – 3:15

Instructor: Helen Cronenberger, Ph.D.
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Office Hours: (Dwntwn - FS 4.444; T,Th 10:00-10:45; Tel: 458-2573)
(1604 - SB 3.01.39K; MW 4:00-4:45; Tel: 458-6297)
Or by appointment

Textbook: Lehninger Principles of Biochemistry, 4th Ed., Nelson & Cox. Freeman, 2005.
Study Guide & Solutions Manual, 4th Ed., Osgood & Ocorr, Freeman, 2005.

Prerequisite: Prerequisites: CHE 2203 and CHE 2242; BIO 2313 is also recommended. Concurrent enrollment in BIO 3522 is recommended.

Course Description: Introduction to biochemistry: macromolecules (proteins, carbohydrates, lipids, nucleic acids) -- their constituent units, reactions, structure and function. Bioenergetics and metabolism of the macromolecular types and their integrated biochemistry in the human body. Medical correlations will be used.

Course Objectives:

- To understand water, pH, pI and their effects on macromolecules
- To know the structure, function & reactions of macromolecules -- proteins, lipids, nucleic acids & carbohydrates
- To relate bioenergetics and enzyme systems to biochemistry of macromolecules
- To follow the metabolism of the biological macromolecules (catabolism, anabolism & control) concentrating upon carbohydrate metabolism as a model
- To relate interactions of biochemical pathways within human body to maintenance of homeostasis
- To relate clinical conditions involving biochemical pathways under discussion to illustrate their normal versus abnormal and compensatory functioning

Grading:

4 Major exams (drop lowest, average high 3)	60%
Weekly quizzes (lowest one dropped; average remainder for)	20%
1 Final (cumulative)	20%

Letter grades will be assigned according to the following:

A = 90 - 100
B = 80 - 89
C = 70 - 79
D = 60 - 69
F = < 60

All grades will be posted on WebTV (normally within 48 hrs). Students are responsible for informing the instructor of any questions regarding grading. **Posted grades will be considered final after one week of posting on WebCT. Thereafter no changes will be considered.**

You will need ParSCORE forms for all quizzes and exams.

For weekly quizzes: 20 answers "**ParSCORE™ QUIZ FORM**".

For major exams: 50 answers each side "**Compatible with Scantron 48/TSM scanners only**".

Quizzes will not be graded if answers not turned in on proper forms or if form not properly filled out (e.g., name, ID, number 2 pencil and completely-filled boxes—lines through boxes not always detected by scanner).

GRADES WILL BE ASSIGNED ACCORDING TO THAT EARNED. A 79 AVERAGE WILL BE A GRADE OF C. Missed Exams/Quizzes: Anyone *missing an exam or quiz* will count that as the one grade to be dropped. **THERE WILL BE NO MAKE UP EXAMINATIONS AND NO CURVE. DO NOT ASK !!**

SYLLABUS

Week of	Topic	Assigned Chapters
Aug 23	Syllabus, Grading, Introduction to Biochem	1
Aug 27	Water, pH, titration, pI, pKa Amino acids	2 3
Sept 5	HOLIDAY SEPT 3 LABOR DAY Prots	4, 5
Sept 10	Proteins	
Sept 17	Enzymes	6
Sept 24	<u>Examination I</u> Carbohydrates	7
Oct 1	Nucleic Acids Lipids	8 10
Oct 8	cont Lipids Membranes, Bioenergetics	(11, 13)
Oct 15	<u>Examination II</u> Glycolysis, Gluconeogenesis,	14
Oct 22	cont. Pentose Phosphate Citric Acid Cycle	16
Oct 29	<u>Examination III</u> Fatty Acid Catabolism	17
Nov 5	cont Fatty Acid Catabolism Diabetes, Regulation Glu & Glycogen Metabolism	15
Nov 12	Amino Acid Metabolism, Urea Cycle	18
Nov 19	<u>Examination IV</u> Oxidative Phosphorylation	19
Nov 26	Highlights biosynth lipids, a.a., prots	21-22

FINAL EXAMINATION: Th, Dec 6, 10:30-1:00

HINTS FOR STUDYING

1. **KEEP UP! KEEP UP!** with the assignments per class period. This course will cover **much material**. It will be very difficult to catch up after missing even a single class assignment. **STUDY EACH DAY !! KEEP UP!**
2. **Plan to spend at least 3 hours (most likely more) studying for every in-class hour.**
3. Many weekly quiz questions will come from study questions in study guide, from book or from Web CT questions. Look at study questions after reading and learning material. Study questions should be used to evaluate your knowledge of the materials. Be sure to know the philosophy behind answers to the study questions as some exam questions will be reworded but based upon the study questions.
4. Read chapters before class, take notes in class, outline chapters and rewrite notes. Review as needed.
5. After reading the chapter and after the lecture, make an outline for each chapter to help organize the material. You should be able to recap the entire chapter without looking at your notes.

I. Macromolecules

A. Nucleic Acids

1. **Bases**
2. **Sugars**
3. **Phosphate**
4. **Major reactions**

B. Proteins

6. If a particular topic is not thoroughly understood, read that material in a different text; go on line and search web (<http://www.google.com>) for explanatory materials. Reading the same material from a different author's perspective helps understanding because it presents that subject matter from a different angle.
7. If something is still unclear consult instructor.

GRADING CRITERIA ARE ESTABLISHED. DO NOT ASK FOR EXTRA CREDIT, STUDY THE MATERIAL EACH DAY. NO CURVES-NO MAKEUPS, DO NOT ASK. NO EARLY EXAMS OR QUIZZES, DO NOT ASK. CONSULT OTHER SOURCES (TEXTS, INTERNET) AND/OR INSTRUCTOR IF SUBJECT AREAS ARE NOT UNDERSTOOD