

Course: CHMB62H3 (May – August, 2013)

Title: Introductory Biochemistry

Course Coordinator & Instructor

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Marker

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Course Summary

Biochemistry refers to the study of chemical processes in living systems. The rules of Biochemistry govern the flow of information and the flow of chemical energy in all organisms. Most biochemical experiments attempt to elucidate the structures and functions of the different components of the cell including proteins, nucleic acids, carbohydrates, and lipids. This course will provide an overview of Biochemistry at the introductory level. Topics covered will include protein structure, enzyme kinetics, central metabolic pathways, and energy transformation.

Course Time

The course will be held every Friday from 10:00 am – 12:00 pm with a tutorial from 1:00 pm – 2:00 pm. There will be 12 two-hour lectures and 12 one-hour tutorials. Tutorials will be used to allow for an open discussion of the material covered in the lectures and to go over problem sets. Both lectures and tutorials will be held in room **BV355**.

Evaluation Scheme

- Two assignments with each assignment worth 10% - total 20%.
- 12 online quizzes on Blackboard 12%
- Midterm: lectures 1 – 6, 34% of grade
- Final: lectures 7 – 12, 34% of grade

Required Textbook

1. *Biochemistry: A Short Course* (second edition) by John L. Tymoczko, Jeremy M. Berg, and Lubert Stryer, W. H. Freeman and Company.

Note: Student Companion to accompany Biochemistry: A Short Course (second edition) is recommended but not compulsory. A copy is on reserve at the library.

Lecture Schedule

LECTURE 1	Chapter 1 Chapter 2	Biochemistry and the Unity of Life Water, Weak Bonds, and the Generation of Order Out of Chaos
LECTURE 2	Chapter 3 Chapter 4	Amino Acids Protein Three-Dimensional Structure
LECTURE 3	Chapter 10 Chapter 11	Carbohydrates Lipids
LECTURE 4	Selected sections of: Chapter 33 Chapter 37 Chapter 38 Chapter 39 Chapter 40	The Structure of Informational Macromolecules: DNA and RNA Gene expression in Eukaryotes RNA processing in Eukaryotes The Genetic Code The Mechanism of Protein Synthesis
LECTURE 5	Chapter 6 Chapter 7	Basic concepts of Enzyme Action Kinetics and Regulation
LECTURE 6	Chapter 8 Selected sections of: Chapter 5 Chapter 41	Mechanisms and Inhibitors Techniques in Protein Biochemistry Recombinant DNA Techniques
LECTURE 7	Chapter 12 Chapter 13	Membrane Structure and Function Signal Transduction Pathways
LECTURE 8	Chapter 15 Chapter 16	Metabolism: Basic Concepts and Design Glycolysis
LECTURE 9	Chapter 17 Chapter 26	Gluconeogenesis The Pentose Phosphate Pathway
LECTURE 10	Chapter 18 Chapter 19	Preparation for the Cycle Harvesting Electrons from the Cycle
LECTURE 11	Chapter 20 Chapter 21	The Electron-Transport Chain The Proton-Motive Force
LECTURE 12	Chapter 22 Chapter 23	The Light Reactions The Calvin Cycle