

Syllabus
Chem 310 - Biochemistry
Fall 2006 – Marian College

Instructor: Dr. John A. Buben
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Office Hours: MW 2:30 – 3:30 pm
 T 10:00 – 11:00 am
 and by appointment (250 MH)

Lecture: MWF 1:00 – 1:50 pm (355 MH)
Lab: Thurs. 1:30 – 4:20 pm (353B MH)

Course Description: A study of the structure and function of the biomolecules that make up living systems, biochemical metabolism and energy processes, and the storage and transfer of biological information.

Credit: Four (4) credit hours.

Course Objectives: Upon completion of the course, students should:

1. Understand the structure and biological function of proteins, and their interaction with the aqueous environment of the cell.
2. Understand the dynamics, kinetics, and regulation of enzyme activity.
3. Understand the structure and biochemical roles of carbohydrates and lipids.
4. Understand the structure and function of nucleic acids and the flow of information from DNA to RNA to protein synthesis.
5. Understand the basic concepts of cellular energy processes and the major metabolic pathways of carbohydrates and lipids.
6. Become familiar with general laboratory procedures used in the study of proteins and other biomolecules in the biochemistry laboratory.
7. Gain familiarity with the biochemical literature through a study of a topic of interest, and gain competence in the preparation of written reports.

Required Text: Concepts in Biochemistry, 2nd Edition, Rodney Boyer (2002)

<u>Basis of Grading:</u>	Midterm Exams (3)	45%
	Laboratory Experiments	24%
	Written Term Project	10%
	Homework Option	6%
	Final Exam	15%

Grading Scale: A : 92% B+ : 86% C+ : 76% D+ : 64%
 A- : 89% B : 82% C : 72% D : 60%
 B- : 79% C- : 68%

Course Outline: We will plan to cover the first 18 chapters of the text.

This material will include: A Study of Amino Acids, Peptides, and Proteins; The Impact of Water on Biomolecules; Enzyme Kinetics and Inhibition; The Structure and Function of Carbohydrates, Lipids, and Nucleic Acids; The Storage and Transfer of Biological Information; Cellular Metabolism; and Energy Processes in Living Systems.

Exam Schedule: Midterm exams will be given following completion of:

Exam 1	Chapters 1 – 5
Exam 2	Chapters 6 – 9
Exam 3	Chapters 10 – 13
Exam 4	Chapters 14 – 18

Exam dates will be announced approximately one week in advance.

Laboratory:

Laboratory sessions will be held each week during which we will conduct about 10 experiments. Experiments will include most of the following: Preparation and Properties of Buffers; Dipeptide Analysis; Electrophoresis; Gel Filtration; Enzyme Kinetics; Evaluation of Lipids and Oils; Analysis and Quantification of Protein, and DNA Techniques. Students will be responsible for preparing a laboratory report for each experiment.

If feasible, we will schedule a visit to Eli Lilly and Company.

Attendance:

Regular attendance in class is expected. Please let the instructor know in advance if you are unable to attend a lab session. Unexcused absences from an exam or frequent absences from class may result in a grade penalty.