

CHEMISTRY 348
Introductory Biochemistry
Fall 2007
CFS 103, TuTh 11:00 – 12:20

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Office hours: Tuesday, Wednesday, Friday 1:00 – 3:00 (others by appointment)

Text: *Biochemistry, 6th Edition*, Berg, Tymoczko and Stryer

CHM 348 is the first semester of a two semester course designed for science majors and students in preprofessional programs. This course will count as advanced hours in Chemistry for either the major or the minor. The second semester CHM 339 course is offered in the spring semester of odd-numbered years. **A minimum grade of C in both CHM 239 and CHM 348** is required to enroll in CHM 339.

Biochemistry is the study of the molecules and chemical reactions of life. Physical laws which apply to natural processes also apply to living organisms. Looking at life's processes on the molecular level, one finds that the basic principles of biochemistry are common to all living organisms. Fundamental molecules of life - proteins, carbohydrates, lipids and nucleic acids - are similar in structure and function in all living organisms. The major areas we will focus on in this course will involve the molecular structure of proteins and how function is related to structure, catalytic molecules and their controls, and the transfer of genetic information. Understanding the complex yet efficient biological molecules and processes that involve them is the basis for treatment of diseases. Current "hot" research areas related to enzymes (enzymes in drug antidotal therapy, enzyme mechanism, enzyme delivery systems) will also be discussed.

Objectives: Students who successfully complete this course will:

- 1) Gain factual knowledge about structures of biological molecules, their behavior and their interactions.
- 2) Understand how structure is related to function, especially for proteins and nucleic acids.
- 3) Develop specific laboratory skills related to protein isolation/analysis and kinetic analysis of enzymes.
- 4) Be able to apply the course information and the laboratory skills to problem solving in both lecture and the laboratory activities.

Tentative Schedule: *(The schedule above is subject to change).*

DATE	SUBJECT	CHAPTERS
8/21 - 9/18 9/20	Introduction; *Background Review; Protein Structure; Protein Purification; Protein Characterization; Exam 1	1 – 3 *(handouts will be provided on the background review)
9/27 – 10/30 11/1	Protein Function; Enzyme Mechanisms and Regulations; *Current Research in “Enzymes in Drug Antidotal Therapy” and “Enzyme Delivery Systems” Exam 2	7 – 10 *(handouts will be provided on current research topics)
11/8 – 12/6 11/29	Nucleic Acid Structure and Function; Ribosomal Protein Synthesis; Gen Regulation; DNA Fingerprinting; DNA Sequences; Solid Phase DNA Synthesis; *Recombinant Biotechnology; Gen Manipulations; Exam 3	4, 5 *(handouts on topics on recombinant biotechnology will be provided)
	Final Exam	Cumulative final

You are expected to attend all lectures and labs. No points will be awarded or subtracted based on lecture attendance. A grade of zero will be given for any missed labs.

Your grade in the class will be based on the three highest exam grades (75%) and any quizzes or other assignments given during the semester (5%) and laboratory grade (20%). If you miss an exam during the semester, your final exam grade will count for that exam. **There are no makeup exams, quizzes or labs.**

Average of 3 exams (100 points each) 75% of course grade

Quiz/assignments 5% of course grade

Laboratory grade 20% of course grade

Grade scale: 90 – 100 % A

80 - 89 % B

70 - 79 % C

60 - 69 % D

Below 60 % F

Some assignments/quizzes will be given via email and/or on Blackboard. It is your responsibility to check you university email account daily and the Blackboard site for this course on a regular basis.

Student Syllabus Guidelines: You may find online a more detailed description of the following policies. These guidelines will also provide you with a link to the specific university policy or procedure:

<http://www.shsu.edu/syllabus/>

Academic Dishonesty: Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. *See Student Syllabus Guidelines.*

Classroom Rules of Conduct: Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices to be used or seen during times of examination.

Student Absences on Religious Holy Days: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. *See Student Syllabus Guidelines.*

Students with Disabilities Policy: It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should visit with the Office of Services for Students with Disabilities located in the Counseling Center. *See Student Syllabus Guidelines.*

Visitors in the Classroom: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

Selected questions at the end of chapters covered in the text, what you are responsible for, will be posted on the blackboard. Sample test questions after each chapter will also be provided as a help for preparing for the tests.

Fun with Benefit: Based on the covered material on this course, student will be able to understand many human diseases/medical problems, *e.g. Mad Cow Disease; Alzheimer Disease; Diabetes; Vitamin Deficiency; Bacterial Infections and Treatment; General Viral Infection; Hemochromatosis; Thyroid Disease; Metabolic Acidosis; Enzyme Deficiency Diseases; Blood Clot, Stroke, Hematuria.* There will be 12 topics listed to offer for short discussion or presentation. Class will decide if they want: a) individual presentations (max. 10 min, 3 points bonus); b) 12 group will be formed and group members will work on the topics after school, and one person will present to the class (1 point bonus for each participant, 2 points for the presenters). If the class votes for individual presentation, the time of the presentation will be setup individually. If the class votes for the group-work, then all the topics will be presented at the same time -at the end of the semester-. Class will vote by signing

	Topic	Individual Presentation	Group Member	Group Presenter
1	#1			
2				
3				
4				
5				
6				
7				
1	#2			
2				
3				
4				
5				
6				

