

Biochemistry Laboratory
Chemistry 4720L
Spring 2002

Lab: W, 1:00 – 5:00

Instructor: John Hansen

Office: Room 2126

Office Hours: M 8:00 – 10:00 & 11:00 – 3:00

W 8:00 – 10:00 & 11:00 – 3:00

Phone: 830-2314 e-mail: jhansen@westga.edu

Text: Fundamental and Laboratory Approaches for Biochemistry and Biotechnology,
Ninfa and Ballou, published by Fitzgerald.

Course Objectives

CHM 4720L is a biochemistry laboratory course intended to introduce to the student basic biochemical and biophysical techniques. This course will emphasize the principles discussed in the lecture courses Biochemistry I and Biochemistry II. Laboratory exercises will emphasize principles in the quantification, separation, purification, and properties of biological molecules, and in their spectroscopy, structure and function.

Course Outcomes

Students will demonstrate ability in separating and purifying biological macromolecules, the use of modern experimental techniques to characterize and handle biological macromolecules and macromolecular assemblies, and in interpreting the biological significance of experimental results obtained from chemical and instrumental techniques.

Expectations

In this course, you will be treated more as a professional chemist. Thus, your laboratory notebook is the primary basis for communication to others of your results. The notebook should be viewed as a legal document. Pages should be bound, numbered, and dated. Entries should be written in pen, with no erasures. If some data entered should not be considered, it should be crossed out with a single line through it. A few pages in the beginning of the notebook should be reserved for a table of contents. The integrity of your results are only as good as their documentation.

At this point in your academic careers you have attained a level of maturity in which you should be considering yourselves scholars. An important part of scholarship is having the discipline and motivation of using library resources, in particular, you should be regularly browsing and consulting professional journals. This should not be a painstaking activity, but rather an activity that brings you satisfaction and enjoyment. Some of the journals that you should find useful in this course are the following: Journal of Biological Chemistry,

Biochemistry, Biophysical Chemistry, European Journal of Biochemistry, Journal of Molecular Biology, Nature, Science.

Grading

Eighty percent of your final grade will be based on the grade of your laboratory note book, which will be graded mid semester and at the end of the semester. Twenty percent of your final grade will be based on laboratory reports, which will be due one week following completion of the laboratory exercise. Grade Scale: > 90% = A; 80 - 90% = B; 70 - 80% = C; 60 - 70% = D; < 60% = F

Tentative Schedule

Date	Lab	Chapter
1/9	Introduction	
1/16	Buffers and Determining the Isoelectric Point of an Amino Acid	1
1/23	Absorbance Measurements of PNP Determining pK _a of PNP	2
1/30	Protein Quantification	3
2/6	Protein Quantification	3
2/13	Chromatography, Part I	4
2/20	Chromatography, Part II	4 & 6
2/27	Electrophoresis, Part I Laboratory Notebook Due	5
3/5	Electrophoresis, Part II	5
3/12	Enzyme Kinetics	8 & 9
3/26	Enzyme Kinetics	8 & 9
4/2	Protein Folding	
4/16	Protein Folding	
4/23	TBA	

Reference Texts

(recommended, not required)

BIOCHEMISTRY by Stryer

BIOCHEMISTRY by Voet and Voet

BIOCHEMICAL CALCULATIONS by Segel

BIOPHYSICAL CHEMISTRY, VOLUMES 1 - 3 by Cantor and Schimmel

ELECTROPHORESIS by Andrews

MECHANISM IN PROTEIN CHEMISTRY by Kyte

STRUCTURE IN PROTEIN CHEMISTRY by Kyte

PROTEIN PURIFICATION by Scopes

PROTEINS by Creighton

ENZYME STRUCTURE AND MECHANISM by Fersht

MODERN EXPERIMENTAL BIOCHEMISTRY by R. Boyer