

# Biochemistry I

CHE 482 / BIO 482

Fall 2008

Class time: MWF 11:00 - 11:50

Location: SC 305

Instructor: Dr. Stefan Paula  
SC 445  
paulas1@nku.edu  
572-6552

Office hours: W 1:00 – 3:00  
F 12:00 – 2:00  
or by appointment

Text: *Fundamentals of Biochemistry: Life at the Molecular Level*  
3<sup>rd</sup> Edition, by Voet & Voet & Pratt

Prerequisite: C or better in Organic Chemistry II (Che 311)

## Course Description:

Introduction to the chemistry of the molecules of life: amino acids, nucleic acids, proteins, lipids, carbohydrates; protein structure and function; enzyme kinetics and mechanisms; membrane structure and function; introduction to metabolism.

## Departmental Student Learning Outcomes Relevant for this Course:

- explain the major concepts and experimental findings in the chemical sciences
- utilize critical thinking skills to apply concept knowledge and adapt experimental techniques to: a) form and test hypotheses and b) solve scientific problems
- compile, critically evaluate, and interpret scientific information and data
- evaluate the relationships between chemistry and mathematics, physics, biology, and other disciplines and between chemistry and society
- apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences

## Additional Student Learning Outcomes:

- describe the physical properties and chemical structure of molecules that form biopolymers
- visualize the three-dimensional structure of proteins using molecular modeling software
- understand the link between the structures of biomolecules and their function
- demonstrate familiarity with fundamental concepts of enzyme kinetics
- analyze reaction mechanisms employed by selected enzymes
- learn basic principles of metabolism using glycolysis as an example
- understand the underlying theory of techniques commonly used in biochemistry
- develop regular studying habits

### Grading:

<i>grade distribution:</i>	<i>value:</i>	<i>grade scale:</i>
3 hourly exams, 20% each	60 %	A 88 – 100 %
final exam (M, 12/15/08)	20 %	B 76 – 88 %
in-class quizzes	10 %	C 62 – 76 %
homework	10 %	D 50 – 62 %
		F 0 – 49 %

### *Exams, homework, quizzes:*

There will be three one-hour exams (TBA) and a comprehensive final exam (M, 12/15/08 from 10:10 - 12:10 pm).

Several homework problem sets will be assigned throughout the semester. They will be posted on Blackboard and collected in class. Late homework will *not* be accepted for credit.

Several *unannounced* quizzes will be given in class throughout the semester. The quizzes will test the students' knowledge of material covered in the last two lectures and encourage regular studying habits. Questions regarding grading of exams, homework, and quizzes must be submitted to the instructor *within one week* after the work has been returned to students.

Attendance is not taken, but highly recommended. Students are expected to show up for class *on time* and *not leave early*. Students are responsible for the material covered in class and will find it difficult to do well in this course if they do not attend the lectures. *Cell phones* and *paggers* may not be used in class.

### *Missed Exams/Quizzes:*

There are no make-ups for missed exams and quizzes. Missed exams will **count as zero**, unless there is a **documented** medical or personal emergency **and the instructor has been notified in a timely fashion**. One quiz can be missed without penalty since the quiz with the lowest score will be dropped at the end of the semester. If an exam is missed because of a documented emergency, the final exam will count 40% instead of 20%.

### Blackboard and Molecular Modeling Project:

Since some of the material presented in class and the homework assignments will be posted on Blackboard, all students are required to obtain a username and a password. In order to complete the molecular modeling project (counts as two homework sets), access to a personal computer with the freeware "DeepView" is required. Details about the project will be announced in class and/or posted on Blackboard.

### Seminars:

Throughout the semester, students will be given the opportunity to attend seminars on subjects related to this course and write a short, one page report on the topic presented. Each report is worth as much as one point on a quiz and will be added to the overall quiz score.

### Other Information:

The last day to drop the course without a grade is 09/15/2008, the last day to drop with a W is 11/03/2008.

### Honesty:

In accordance with the Student Honor Code, cheating will not be tolerated. A student found guilty of cheating will receive an **F** for the course.

Tentative Schedule of Topics:

<i>Topic</i>	<i>Chapter in Textbook</i>
scope of Biochemistry	1
water, aqueous solutions, pH, buffers	2
amino acids/peptides	4
primary structure of proteins, purification	5
<b>Exam 1</b>	
protein three-dimensional structure	6
protein function / myoglobin and hemoglobin	7
enzymatic catalysis	11
enzyme kinetics and inhibition	12
<b>Exam 2</b>	
carbohydrates	8
introduction to metabolism	14
glycolysis	15
<b>Exam 3</b>	
nucleic acids	3
lipids, biological membranes	9, 10

**Final Exam**

This schedule is only tentative and subject to change.

## **Policies of the Department of Chemistry at Northern Kentucky University**

- All items on syllabi are subject to change by the instructor.
- Students are responsible for reading and understanding all items on the syllabi. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.
- The work you will do in any course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements.
- Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- Students with disabilities who require accommodations (Academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859/572/6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations.
- This is a web enhanced course. Students meet at regularly scheduled class time and will need access to the internet to fulfill course requirements.
- A C or better is required in this course to enter CHE 483.