Course syllabus for Chemistry 142A

Biochemistry

Class meets: Mon, Wed, Fri 1:00 – 1:50 AM Girvetz Hall 1004

Instructor: Professor Kalju Kahn, Office: PSB-N 2623
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Office Hours: Tue and Thu (11:00-12:00 AM) or by appointment
Course website: http://www.chem.ucsb.edu/~kalju/chem142A

Lecture Textbooks:
Required: David L. Nelson and Michael M. Cox,
Lehninger Principles of Biochemistry, 4th edition
Recommended: Marcy Osgood and Karen Ocorr (study guide)
The Absolute, Ultimate Guide to Lehninger Principles of Biochemistry
Textbook website: http://www.whfreeman.com/lehninger/

The Course:

Chem 142A is the first course of a three-course sequence (Chem 142ABC) and serves as an introduction and
prerequisite for the two following courses. The Chem 142 sequence provides the students fundamentals of
biochemistry and molecular biology, and is mainly intended for students in the field of chemistry and biology.

The current course, Chem 142A, has two main focuses:

1) Understanding of life via study of structures, properties, and reactions of biological macromolecules, such as
proteins and nucleic acids.

2) Understanding biological macromolecules via study of structures and properties of small biological molecules,
such as amino acids, nucleotides, saccharides, and lipids.

Expectations of Students:

1) Attendance and taking good lecture notes is expected. Supplementing the lecture notes with study notes based
on the textbook is a good way to improve your chances to be successful in this course. The ‘Further Reading”
section of the textbook lists valuable works and sampling of this material is strongly suggested for students who
see their career as a researcher or educator in biochemistry.

2) The practice problems in the book are an excellent way to learn the material. Try to answer them as you read
the textbook. The answers to these problems are not to be turned in, but you are likely to do well in the exam
when you can independently answer majority of the practice problems.

3) Five written homeworks (20 pts each) will be assigned. You need to turn these in personally to your instructor
in the lecture on Wednesday or Friday of the week they are due. Do not drop you homework off to the course
TA or in my mailbox. Do not send your homework in with somebody else; be prepared to show your photo-ID
when turning in the homework.

4) Two mid-terms (each 100 points) and a final exam (200 points) will be given. The two 45-minute mid-terms
test your knowledge of topics covered prior to exam. The 75-minute final will cover all the topics that were
taught in this course and also will test your ability to understand the material.
5) Honesty and academic integrity must be always preserved. While working with others is encouraged outside the classroom, you must answer the exam questions individually. No supplemental material should be used during an exam.

6) No student shall give, sell, or otherwise distribute to others or publish any electronically available course materials or recordings made during any course presentation without the written consent of the instructor.

7) There are no excuses for class absence, especially on the exam days. There are no make-up exams. If you must miss a test, contact the lecturer in advance and provide a verifiable doctors excuse.

8) Consult your departmental advisor about drop deadlines. For example, late drops will not be granted to students from the College of Engineering.

9) The grade is based on the number of points out of 500 points total. Grading will be based on the curve but you have to meet a certain level to get grade higher than F.

Study tips:

- Read the relevant textbook material before the class meets. I like to interact with students during our meetings and you enjoy the lectures more if you can think along

- Review (or rewrite) your class notes the same day and supplement them with material from the textbook and other resources (books, Internet). Ask for help if something remains unclear.

- Do not even hope that you can be successful by trying to memorize all the material few days before the exam. The final exam expects that you understand, not only remember the material.
Class schedule for Fall 2007

**Week 1. Sept 28**
Chapter 1: Foundations of Biochemistry: What is Life?

**Week 2. Oct 1-Oct 5**  
**HW1 due by Friday**
Chapter 1: Foundations of Biochemistry: The Molecular Logic of Life  
Chapter 1: Foundations of Biochemistry: Cells and Evolution  
Chapter 1: Chemical Foundations: Biomolecules and Reactions

**Week 3: Oct 8-Oct 12**  
**HW2 due by Friday**
Chapter 2: Interactions, Water  
Chapter 2: Weak acids and bases, Ionization, pH  
Chapter 3: Amino Acids and Peptides

**Week 4: Oct 15-Oct 19**
Chapter 3: Peptides and Proteins: Primary Structure and Study Methods  
Chapter 4: Secondary Structure of Proteins  
Mid-term I on Friday

**Week 5: Oct 22-Nov 6**  
**HW3 due by Friday**
Chapter 4: Fibrous Proteins: Structure and Function  
Chapter 5: Membraneous and Globular Proteins: Structure and Function, Protein Folding  
Chapter 5: Myoglobin and Hemoglobin

**Week 6: Oct 29-Nov 2**  
**HW4 due by Friday**
Chapter 5: Proteins of the Immune System  
Chapter 6: Molecular Motors  
Chapter 6: Enzyme Catalysis

**Week 7: Nov 5-Nov 9**
Chapter 6: Enzyme Catalysis and Kinetics  
Chapter 7: Carbohydrates  
Chapter 7: Glycobiology

**Week 8: Nov 12-Nov 16**
Veteran’s day holiday (Nov 12)  
Mid-term II on Wednesday: Chapters 4-7  
Chapter 8: Nucleotides

**Week 9: Nov 19-Nov 23**
Chapter 8: Nucleic Acids, DNA Structure  
Chapter 8: DNA Function and Properties  
Thanksgiving holiday (Nov 23)

**Week 10: Nov 26-Nov 30**  
**HW5 due by Friday**
Chapter 9: DNA Technologies  
Chapter 10: Lipids

**Week 11: Dec 3-Dec 7**
Chapter 11: Biological Membranes  
Chapter 12: Introduction to Biosignaling. Course review.

Final exam covers all the material that was covered in the course.

*Good luck! — Kalju*