Course syllabus for Chemistry 142A

Biochemistry

Class meets: Mon, Tue, Wed, Thu 11:00 – 12:20 AM North Hall 1105

Instructor: Professor Kalju Kahn, Office: PSB-N 1511
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Office Hours: Mon and Wed (1:00-2:00 PM) 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) 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.

4) 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.

5) 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.
6) 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.

7) The grade is based on the number of points out of 400 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.

**Syllabus for summer 2005**

**Week 1: Aug 1-Aug 4**
- Chapter 1: Foundations of Biochemistry: The Molecular Logic of Life
- Chapter 1: Foundations of Biochemistry: Cells and Evolution
- Chapter 2: Chemical Foundations: Biomolecules and Reactions
- Chapter 2: Water. Interactions

**Week 2: Aug 8-Aug 11**
- Chapter 2: Weak acids and bases, Ionization, pH
- Chapter 3: Amino Acids
- Chapter 3: Peptides and Proteins: Primary Structure and Study Methods
- Chapter 4: Secondary Structure of Proteins

**Week 3: Aug 15-Aug 18**
- Mid-term I on Monday: Chapters 1-3
- Chapter 4: Fibrous Proteins: Structure and Function
- Chapter 5: Membraneous and Globular Proteins: Structure and Function, Protein Folding
- Chapter 5: Proteins of the Immune System and Molecular Motors

**Week 4: Aug 22-Aug 25**
- Chapter 6: Enzyme Catalysis
- Chapter 6: Enzyme Kinetics
- Chapter 7: Carbohydrates
- Chapter 7: Glycobiology

**Week 5: Aug 29-Sep 1**
- Mid-term II on Monday: Chapters 4-7
- Chapter 8: Nucleotides and Nucleic Acids
- Chapter 8: DNA Structure and Function
- Chapter 9: DNA Technologies

**Week 6: Sep 5-Sep 9**
- Labor Day (Sep 6)
- Chapter 10: Lipids
- Chapter 11: Biological Membranes
- Chapter 12: Biosignaling. Course review.
- Final exam on Thursday: Chapters 1-11.

**Good luck! — Kalju**