Course syllabus for Chemistry 142A

Biochemistry

Class meets: Mon, Tue, Wed, Thu 11:00 – 12:20 AM  Phelps 3519

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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, 5th or 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. Lecture slide graphics is provided to students ahead of the class but you should write down what I lecture/we discuss about these slides. 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) Work on practice problems in the book to reinforce your understanding of the material. You are likely to do well in exams if you can independently answer majority of the practice problems.

3) Three graded weekend problem sets will be given out throughout the course. These questions represent some of the more challenging questions from past exams so that you will have a chance to see what my expectations are. Each problem set is worth 10 points; students are allowed to use whatever resources and help they could find when answering these problems.

4) Two mid-terms (each 90 points) and a final exam (190 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) Do not miss exams; there are no make-ups. If you must miss a test for a medical reason, contact the lecturer in advance and provide a verifiable doctors excuse.

8) Consult your departmental advisor about drop deadlines. In general, late drops will not be granted.

9) 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 will 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 2010**

*Week 1: Aug 2-Aug 5*
- 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 9-Aug 12*
- Chapter 2: Weak acids and bases, Ionization, pH
- Chapter 3: Amino Acids
- Chapter 3: Peptides and Proteins: Primary Structure and Study Methods

*Week 3: Aug 16-Aug 19*
- Mid-term I on Monday: Chapters 1-3
- Chapter 4: Secondary Structure of Proteins
- Chapter 4: Fibrous Proteins: Structure and Function
- Chapter 5: Membraneous and Globular Proteins: Structure and Function, Protein Folding

*Week 4: Aug 23-Aug 26*
- Chapter 5: Proteins of the Immune System
- Chapter 5: Proteins that do Mechanical Work: Actin, Myosin, and Molecular Motors
- Chapter 7: Carbohydrates
- Chapter 7: Glycobiology

*Week 5: Aug 30-Sep 2*
- Mid-term II on Monday: Chapters 4,5,7
- Chapter 8: Nucleotides and Nucleic Acids
- Chapter 8: DNA Structure and Function
- Chapter 9: DNA Technologies

*Week 6: Sep 6-Sep 9*
- Labor Day (Sep 6)
- Chapter 10: Lipids
- Chapter 11: Biological Membranes
- Course review
- Final exam on Thursday: Chapters 1-5, 7-11.

*Good luck! — Kalju*