

SOUTHERN CONNECTICUT STATE UNIVERSITY

CHE 451 Biochemistry II
Spring Semester, 2006

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Office Hours:
Mon.: 11-12
Wed.: 11-12, 2-3
Fri.: 11-1

Course number: CHE 451

Credit Hour: 4

Prerequisite(s): CHE 450

Course Title: Biochemistry II

COURSE DESCRIPTION:

Biochemistry is a physical science that applied to biological problems. Biochemistry involves the study of the structure and function of the molecules that make up living cells. Understanding the structural properties of a molecule enables us to form hypotheses about its interaction with other molecules and its function in the cell. CHE 451 is the second half of a two-semester biochemistry course. In CHE 451, we will focus on two major types of biological molecules: lipids and nucleic acids. We will also discuss the building blocks used to construct them. Further topics will include fatty acid and protein metabolism, the assembly of macromolecules into cellular structures such as membranes, receptors, and transport systems.

COURSE CONTRIBUTION:

CHE 451 can fulfill the requirement for American Chemical Society (ACS) certification.

CHE 450-451 is required for chemistry majors whose degree is in Biochemistry Concentration.

CHE 450-451 contributes as electives for those students who pursue chemistry with secondary education certification.

LEARNER OUTCOMES & ASSESSMENTS:

1. Students will have a solid comprehension of the structures and functions of biological molecules, especially nucleic acids and lipids, the metabolism of cells and organisms, and principles of molecular biology. Students will be able to correlate biochemical knowledge with human health and disease and their everyday activities and choices. (INTASC 1, 4, 5, 6, 8, 10; NSTA 1, 2, 3, 4, 5, 6, 7, 8; CCCT 1.3, 1.4, 1.5, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.4, 3.6.)
2. Students will be able to comprehend, absorb and critically analyze the new knowledge generated by research. Students will be able to distinguish hopes from hypes in breakthrough claims appeared everyday in media. Students will also be able to arrive at independent conclusions and opinions on issues like cloning and stem cell research. (INTASC 9; NSTA 4, 7, 10; CCCT 3.4.)

MODES OF LEARNING

The modes of learning include:

- Lectures by faculty
- Class discussion
- Multimedia presentation
- Case analysis and student presentation
- Problem based learning

COURSE OUTLINE

<u>Lecture #</u>	<u>Topic</u>
1 - 4	Chapter 15: Glycogen Metabolism and Gluconeogenesis
5 - 8	Chapter 9: Lipids
9 - 11	Chapter 10: Biological Membranes
12	Chapter 19: Lipid Metabolism
13	Feb. 24 Exam 1
14 - 18	Chapter 19 cont'd
19 & 20	Chapter 18: Photosynthesis

21 & 22	Chapter 20: Amino Acid Metabolism: Urea Cycle
23 - 25	Chapter 3: Nucleic Acids
26	Mar. 31 Exam II
27 – 36	Chapter 23 – 26: DNA, RNA and Protein Synthesis
37 – 39	Special Topics: Receptors and Signal Transduction
40	May 8 Exam III
41	Special Topics cont'd
May 15	Final Exam (Cumulative)

REQUIRED TEXT(S)

Text:

- *Fundamentals of Biochemistry*, 2nd. edition by Voet, Voet & Pratt, John Wiley & Sons, Inc. (2005)
- *Student Companion to accompany Fundamentals of Biochemistry*, by Voet, etc., John Wiley & Sons, Inc. (2000)

Class URL:

- Section 1: <http://edugen.wiley.com/edugen/class/cls14141>
- Section 3: <http://edugen.wiley.com/edugen/class/cls14144>

COURSE REQUIREMENTS:

Students are required to take all the tests, actively participate in class discussion, conduct all the lab experiments and finish the required lab reports.

Illness and Absences:

If you are absolutely unable to attend an examination due to illness or other crisis, please leave a message on my voice mail at 392-6272 or in the Departmental Office at 392-6260. If you wish to take a make-up examination, you must provide me with a medical excuse or other proof of illness. The doctor's note must include a diagnosis or

statement that you were incapable of taking the examination.

Laboratory:

The Chemistry Department requires that everyone wear Safety Glasses while in the laboratory, beginning with the first laboratory. If you show up for any laboratory period without Safety Glasses, you will NOT be allowed to perform the experiment and you will receive a zero grade for that experiment. The proper Safety Glasses must meet OSHA regulations and can be purchased at the Southern Connecticut State University Bookstore.

EVALUATION CRITERIA:

Three one-hour examinations	40%
e-grade assignments	10%
Laboratory grade	25%
<i>Final examination (Cumulative)</i>	<i>25%</i>

The final grade will be determined by the percentage of points obtained. The actual grade will be based on the Southern Connecticut State University grading scale with possible adjustment for class average at the end of the semester (if necessary).

Please remember that it is the policy of the Chemistry Department at Southern Connecticut State University that, to receive a passing grade in CHE 451, you **MUST pass the laboratory portion of the course**. A passing grade for the laboratory portion of the course is a 60%.