

OAKTON COMMUNITY COLLEGE
Spring Semester, 2012

CLASS SYLLABUS

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I.	<u>Course Prefix</u>	<u>Course Number</u>	<u>Section Number</u>	<u>Course Name</u>	<u>Credit</u>	<u>Lecture</u>	<u>Lab</u>
	CHM	229	002	Biochemistry (non-laboratory course)	3	3	0

II. Prerequisites:

CHM 207 or CHM 222 or CHM 224, with minimum grade of C, or consent of instructor.
BIO 101 or higher BIO course is recommended.

III. Course (Catalog) Description:

Course introduces molecules, macromolecules, and processes found in living organisms. Content includes structures of amino acids, nucleotides, lipids, and sugars; corresponding macromolecular structures, i.e. proteins, nucleic acids, membranes, and polysaccharides as related to their biological functions; kinetics and mechanism of enzymatic reactions, the central metabolic pathways, the genetic code and developments in biotechnology.

IV. Learning Objectives:

Students who successfully complete this course will be able to do the following at an acceptable level:

- A. Describe and recognize the chemistry of organic functional groups found in biological molecules.
- B. Describe and classify the basic elements of protein structure.
- C. Describe and classify various types of lipids.
- D. Describe and identify the component parts of nucleic acids.
- E. Describe and classify different types of carbohydrates.
- F. Understand the relationship between structure and function of biological molecules.
- G. Use the simple equations of enzyme kinetics.
- H. Explain and give examples of the intramolecular interactions in macromolecules.
- I. Explain and give examples of the intermolecular interactions between macromolecules and their ligands.
- J. Describe the dynamics and regulation of metabolic pathways (glycolysis, citric acid cycle, and oxidative phosphorylation).
- K. Understand and describe the processes involved in the replication, transcription, and translation of the genetic code.

V. Academic Integrity:

Students and employees at Oakton Community College are required to demonstrate academic integrity and follow Oakton's Code of Academic Conduct. This code prohibits:

- cheating;
- plagiarism (turning in work not written by you, or lacking proper citation);
- falsification and fabrication (lying or distorting the truth);
- helping others to cheat;
- unauthorized changes on official documents;
- pretending to be someone else or having someone else pretend to be you;
- making or accepting bribes, special favors, or threats; and
- any other behavior that violates academic integrity.

There are serious consequences to violations of the academic integrity policy. Oakton's policies and procedures provide students a fair hearing if a complaint is made against you. If you are found to have violated the policy, the minimum penalty is failure on the assignment. In addition, a disciplinary record will be established and kept on file in the office of the Vice President for Student Affairs for a period of 3 years.

Details of the Code of Academic Conduct can be found in the Student Handbook.

VI. Instructional Materials:

Textbook: Biochemistry, 7th edition. Campbell & Farrell. Brooks/Cole, Cengage Learning. 2012. Supplemental readings may be assigned by the instructor.

VII. Lecture Schedule, Topics and Readings

Biochemistry and the Organization of Cells	Chapter 1 (except pages 26-30)
Water: The Solvent for Biochemical Reactions	Chapter 2
Amino Acids and Peptides	Chapter 3
Three-Dimensional Structure of Proteins	Chapter 4
EXAM I	February 9
Protein Characterization	Chapter 5
Behavior of Proteins	Chapters 6 and 7
Lipids and Proteins in Biological Membranes	Chapter 8
EXAM II	March 8
Nucleic Acid Structure	Chapter 9
Replication of DNA	Chapter 10
Biosynthesis of RNA	Chapter 11
Protein Synthesis	Chapter 12
Biotechnology	Chapter 13
EXAM III	April 12
Carbohydrates	Chapter 16
Energy Changes in Metabolism	Chapter 1, pages 26-30, and Chapter 15
Glycolysis and Carbohydrate Metabolism	Chapters 17
The Citric Acid Cycle	Chapter 19
Electron Transport/Oxidative Phosphorylation	Chapter 20
EXAM IV	May 10

VIII. Methods of Instruction:

Material is presented in lecture-discussion format. Students are expected to participate by asking questions and by responding to questions asked of them. Visual aids will be used. If available, molecular models will also be used.

In-class problem-solving and homework assignments supplement classroom discussion.

Homework assignments are due on the date of the exam which covers the corresponding chapters.

Failure to submit homework on time will automatically reduce the exam score by five points.

Homework problems, selected to emphasize specific course content in order to promote student success, are as follows (subject to change):

Chapter 1:	2, 3
Chapter 2:	2, 5, 7, 11, 12, 13, 14, 16, 17, 23, 31, 38, 39, 42, 51
Chapter 3:	7, 16, 17, 24, 25, 42, 45
Chapter 4:	1, 2, 7, 11, 32, 34, 36, 51
Chapter 6:	10, 24, 25, 43, 44, 45, 46, 50, 55
Chapter 8:	3, 5, 6, 8, 9, 10, 13, 17, 22, 25, 28, 29, 34, 37, 49
Chapter 9:	2, 4, 6, 7, 13, 26, 31, 33, 34, 44
Chapter 10:	7, 11, 12, 16, 20, 22, 23, 27, 28, 42, 46, 51
Chapter 11:	5, 15, 23, 25, 33, 50, 51, 55
Chapter 12:	2, 3, 6, 10, 16, 36, 49, 56, 58
Chapter 13:	3, 5, 8, 12, 27, 44
Chapter 16:	15, 24, 25, 35, 38, 45, 47, 50
Chapter 15:	from Chapter 1, 35; then 17, 18, 20, 21, 24, 32, 36, 42, 45
Chapter 17:	3, 7, 16, 27, 32, 41, 42 AND study table you prepare listing steps of glycolysis
Chapter 19:	4, 5, 7, 8, 19, 20, 24 AND study table you prepare listing steps of citric acid cycle
Chapter 20:	1, 2, 31, 38, 39, 41, 46, 47

IX. Course Practices Required:

- Attend **ALL** lectures and arrive **ON TIME**. You are expected to explain any unavoidable absence to the instructor. Explain any anticipated absence **IN ADVANCE**.
- Read the assigned materials **BEFORE** the relevant lecture session.
- Be an active participant in class discussions.
- Take careful, thorough notes.
- Complete all in-class exercises and present them in a neat and clear format.
All out of class work must be **TYPED** and presented in a neat and clear format.
Work that does not meet the instructor's standards, or that is submitted after its due date, or that is submitted in electronic format will **NOT** be accepted.
- The instructor is **NOT** responsible for contacting you if you miss a class during which an assignment is given or the exam schedule is revised.
- During exams, remain in your seat at all times. You may not leave the room for any reason.
- The use of cell phones and pagers is **STRICTLY PROHIBITED**.
Turn them off during class time.
- The use of programmable calculators is **STRICTLY PROHIBITED**.
- The use of audio-recording or image-capturing devices is **STRICTLY PROHIBITED**.
- The use of laptop computers is **STRICTLY PROHIBITED**.
- Devices used in violation of this section become the property of the instructor.

X. Method of Evaluating Student Progress:

3	100 point lecture exams	300 points	(There are actually 4 lecture exams, but the exam with the lowest score is dropped when calculating total points.)
10	10 point in-class exercises	100 points	
1	20 point presentation	<u>20 points</u>	
Total		420 points	

Grades are based on total points earned:

A = 378-420 B = 336-377 C = 294-335 D = 252-293 F = fewer than 252

YOU WILL NOT BE PERMITTED TO MAKE UP EXAMS OR IN-CLASS EXERCISES. IF YOU DO NOT COMPLETE THE PRESENTATION, YOUR TOTAL POINT SCORE FOR THE CLASS WILL BE REDUCED BY 20 POINTS.

No extra credit is accepted in lieu of or in addition to the regular course requirements. There are absolutely **NO EXCEPTIONS** to this rule.

Borderline grades may be boosted by participation, attitude and progressive improvement over the length of the course.

You cannot take an "Incomplete" in this course.

XI. Other Course Information:

The exam schedule is tentative and may change as conditions dictate. If necessary, a corresponding change will be made to the method of evaluation.

Oakton Community College recognizes the broad diversity of religious beliefs of its constituencies and has embraced a practice of shared responsibility in the event a religious observance interferes with class work or assignments. If religious observance interferes with your adherence to this schedule, it is your responsibility to inform me in writing by **January 19, 2012**, indicating the date(s) of any class(es) you will miss. I will make **reasonable** accommodation for you, **but am not responsible for teaching material again.**

If you are struggling with this course, please see me during my office hours and take advantage of Learning Center services.

If you have a documented learning, psychological, or physical disability you may be entitled to reasonable academic accommodations or services. To request accommodations or services, contact the ASSIST office in the Learning Center. All students are expected to fulfill essential course requirements. The College will not waive any essential skill or requirement of a course or degree program.

Important Dates:

February 12	Last day to withdraw and have class dropped from record
February 12	Last day to change to Audit
February 20	Holiday - College closed
March 11	Last day to withdraw from class with a "W"
March 12-18	Spring Break