

COURSE SYLLABUS

Chemistry 445-01 • Survey of Biochemistry • Fall 2007

Instructor:

Dr. John G. Arnez

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Lectures: TR 9:30 - 10:45 am — CB 16

Office Hours: TR 11:00 am - 12:00 m

Text: Lehninger, Nelson and Cox, *Principles of Biochemistry*, 4th. edition, W.H. Freeman & Co.

Prerequisites: Chemistry 341-342.

Course Description:

Chemistry 445 is an upper division, one semester, undergraduate course surveying the fundamental components of biochemistry. It will cover the major components of living matter, structure and function of proteins and nucleic acids, composition and function of carbohydrates and lipids, metabolism and regulation, and biosynthesis of DNA, RNA and proteins. Some experimental tools used by researchers to study these systems will be discussed. By the end of the semester, the students will have acquired a greater understanding and appreciation for the chemistry behind the processes of life. N.B.: The course does not count as credit for BS major with concentration in biochemistry.

Examinations and Grading:

The course grade is based on three semester exams given during lecture times, a macromolecular structure project, and a comprehensive final exam. Exams will be graded as soon as possible.

Exam I	Tuesday, Sep. 18	100 points
Exam II	Tuesday, Oct. 16	100 points
Exam III	Tuesday, Nov. 13	100 points
Macromolecule Project	Thursday, Nov. 29	50 points
Final Exam	Monday, Dec. 10	150 points

Total		500 points

Grading Scale:	A:	≥87.5%	(≥438 points)
	B:	75.0 - 87.4%	(375 - 437 points)
	C:	62.5 - 74.9%	(313 - 374 points)
	D:	50.0 - 62.4%	(250 - 312 points)
	F:	≤49.9%	(≤249 points)

These letter grade ranges apply for exams and the overall course grades. Exam grades can be scaled if necessary; grades may be scaled up but shall not be scaled down.

Exams must be taken at scheduled times. There will be NO MAKEUP EXAMS. A missed Semester Exam counts as zero. Exams missed for a justifiable reason (medical, job, military, athletic, etc.) must be *properly documented* (e.g. a doctor's statement, a letter from a supervisor) and reported to Dr. Arnez in advance; if this is not possible, you should contact the instructor promptly thereafter. Traffic, car problems, defective alarm clock, etc. are not acceptable excuses. In the rare instance of a justifiably missed exam, a makeup exam may be taken in the instructor's office within a week of the scheduled exam. Alternatively, the exam may be dropped and the grade calculated on the basis of completed work.

If weather or other circumstances result in closing of the University on an Exam day, the Exam will be held on the next regularly scheduled class meeting.

The macromolecular structure project will involve writing a paper about the structure and function of a macromolecule (protein, nucleic acid or a complex) whose three-dimensional structure has recently been determined. Further information about this assignment and a listing of approved macromolecules will be presented in class.

The last day to withdraw from the course is October 11, 2007.

Lecture Policy:

Regular attendance of the lectures is strongly encouraged but not required. However, you are responsible for the material covered in lectures; information not contained in the textbook may also be presented in class. Lecture notes will be posted on *Blackboard* ahead of time; you may wish to print them out and annotate them during lectures. Regular attendance of, and participation in, the lectures will increase your ability to perform well in the course. Attendance is mandatory only for exams.

Homework will be assigned to help you work out problems and monitor your progress in the course, so you are strongly encouraged to complete it. Most of the problems will come from the Lehninger textbook. Homework will not be collected or graded. Selected problems will be discussed in class. Similar questions *may* appear on exams. If you have questions, bring them to office hours of the instructor.

You may bring a calculator to class and to exams. Make sure you know how to use it and that the battery has a charge on it. However, alphabetic memory-capable calculators (i.e., those which can hold all 26 alphabet letters) will NOT be permitted during the exams. Points will be deducted from your exam if you are caught using such a calculator.

Use of certain electronic devices is prohibited in the classroom as a courtesy to your classmates; they include pagers, cell phones, radios and other audible devices. Please turn them OFF before the lecture or exam starts. Students disrupting the class with such devices or in other ways such as excessive chatter will be respectfully asked to leave the lecture room; infractions during an exam can lead to a loss of 5 to 10 points. Audio recording of lectures for private use is acceptable.

This course can be challenging, as biochemistry is an interdisciplinary science, taking advantage of different aspects of chemistry, biology and physics. You should familiarize yourself with the chapter material indicated in the syllabus before coming to class. Periodically, information not covered in the textbook will also be presented. The most important strategy for success in the course are regular attendance of lectures, good lecture notes, and doing the assigned problems in a timely fashion.

Do not be afraid to ask questions or seek help if you need it. The instructor (Dr. Arnez) is available for questions in person during office hours or by appointment, or by e-mail. You may also wish to contact the teaching assistant (TA), Richard T Woofter , during his office hours (Tue. & Wed. at 1:00 pm) in room 305 in BRB (Belknap Research Building); his e-mail: ricky.woofter@louisville.edu .

Students with special needs or concerns are encouraged to contact Dr. Arnez regarding these issues.

Schedule:

The following is a tentative schedule for the semester and is subject to change. Changes, if they occur, will be announced in class and posted on the Blackboard. It is the student's responsibility to be aware of these announcements even if they are absent from the class.

Day	Date	Topic	Lehninger Chapter
Tuesday	Aug. 21	Introduction	1, 2
Thursday	Aug. 23	Amino Acids and Peptides	3
Tuesday	Aug. 28	Proteins	3
Thursday	Aug. 30	Proteins, Structure	3, 4
Tuesday	Sep. 4	Protein Structure	4
Thursday	Sep. 6	Carbohydrates	7
Tuesday	Sep. 11	Nucleotides and Nucleic Acids	8
Thursday	Sep. 13	Nucleic Acid Structure	8
Tuesday	Sep. 18	EXAM I	
Thursday	Sep. 20	Enzymes	6
Tuesday	Sep. 25	Enzymes	6
Thursday	Sep. 27	Lipid Chemistry, Membranes	10, 11
Tuesday	Oct. 2	Bioenergetics and Metabolism	13
Thursday	Oct. 4	Glycolysis	14
Tuesday	Oct. 9	<i>Fall Break</i>	
Thursday	Oct. 11	Gluconeogenesis	15
Tuesday	Oct. 16	EXAM II	
Thursday	Oct. 18	Citric Acid Cycle	16
Tuesday	Oct. 23	Electron Transport	19
Thursday	Oct. 25	Photosynthesis; Intro. Project	20
Tuesday	Oct. 30	Lipid Metabolism	17
Thursday	Nov. 1	Lipid Metabolism	21
Tuesday	Nov. 6	Amino Acid Metabolism	22
Thursday	Nov. 8	Signaling and Hormones	12, 23
Tuesday	Nov. 13	EXAM III	
Thursday	Nov. 15	Nucleic Acid Metabolism: DNA	25
Tuesday	Nov. 20	Nucleic Acid Metabolism: RNA	26
Thursday	Nov. 22	<i>Thanksgiving Day</i>	
Tuesday	Nov. 27	Protein Biosynthesis	27
Thursday	Nov. 29	Protein Biosynthesis, Regulation Macromolecule Project Due	27, 28
Monday	Dec. 10	FINAL EXAM (8:00 AM - 10:30 AM)	CB 16