

**Chemistry 361/461  
Survey in Biochemistry  
Summer Session I 2013**

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Class: 6-9 pm on MWTh in Cuneo Hall 311

**TENTATIVE SCHEDULE OF LECTURES AND QUIZZES**

#	Day	Date	Subject	Chapters	Lecture
1	M	5/20	Introduction	1	1.1
			Biomolecules	1	1.2
			Water & pH	2	1.3
2	W	5/22	Amino Acids, Peptides and Proteins	3	2.1
			Protein Structure and Non-covalent Interactions	4	2.1
3	Th	5/23	Hemoglobin	4	3.1
			Protein Purification & Methods	5	3.2
	M	5/27	<b>Memorial Day – no class</b>		
4	W	5/29	Discussion	1 – 5	
			Enzymes: Basic Concepts & Kinetics	6	4.1
			Enzymes: Catalytic Strategies	7	4.2
5	Th	5/30	<b>Test 1</b>	<b>1 – 5</b>	
			Regulation: Enzymes	7	5.1
			Lipids and Membranes	8	5.2
6	M	6/3	Channels and Pumps	8	6.1
			Nucleic Acid Structure	9	6.2
			Molecular Biology – selected topics	10-13	6.3
7	W	6/5	Discussion	6-13	
			Carbohydrates	16	7.1
8	Th	6/6	<b>Test 2</b>	<b>6-13</b>	
			Signal Transduction	24	8.1
9	M	6/10	Signal Transduction	24	8.1
10	W	6/12	Metabolism and Bioenergetics	15	10.1
			Glycolysis and Gluconeogenesis	17 & 18	10.2
11	Th	6/13	Glycolysis and Gluconeogenesis	17 & 18	10.2
12	M	6/17	Pentose Phosphate Pathway	18	12.1
			Glycogen Metabolism	18	12.2
13	W	6/19	Citric Acid Cycle	19	13.1
			Discussion	15 – 18, 24	
14	Th	6/20	<b>Test 3</b>	<b>15-18, 24</b>	
			Oxidative Phosphorylation	20	14.1
15	M	6/24	Fatty Acid Metabolism	21	15.1
			Lipid Biosynthesis	21	15.2

16	W	6/26	Biosynthesis of Nucleotides	23	16.1
			Amino Acid Metabolism	23	16.2
			Integration of Metabolism	24	16.3
17	Th	6/27	Discussion	1 - 27	
			<b>Final Examination</b>	<b>20 – 27 plus 1-18</b>	

## COURSE OBJECTIVES

Life is based on four principle cellular components: proteins, lipids, carbohydrates and nucleic acids. Biochemistry is concerned with the structure, function and interactions of these compounds with one another and their environment. As such biochemistry plays a vital part in all aspects of the medical sciences since it not only helps us to understand how the (human) cell works at a molecular level but also how to decipher and possibly counter pathogenic conditions. Consider that almost all drugs used in medical treatment target proteins or groups of proteins to modulate their biochemical properties. In this course, we will focus on proteins and nucleic acids, their structure-function relationships, kinetics and regulation. We will also look at lipid-, carbohydrate, and nucleic acid-metabolisms, and their impact on cells, tissues and (human) organisms.

**Required Text:** Mary K. Campbell and Shawn O. Farrell (2012) *Biochemistry*, 7th ed., Brooks/Cole, Cengage Learning. (Note that there are many good biochemistry texts so you can use others if you have one that you like better.)

You should read the appropriate chapter **before** class. Please realize that I will not have time to lecture on every topic but will emphasize what I consider to be the most important topics. Obviously, these more important topics will be emphasized on examinations but you are responsible for all of the text, lecture and discussion material. **Use the lectures as a guide to what I think is important.**

**Office Hours:** After class any evening. You can also make an appointment by e-mailing me if this is not a good time for you.

**Grading Policy:** There are 3 tests and a final examination during the course. There will be 100 points possible on each test and 200 on the final. The final examination will be 50% on new material and 50% on the material covered in Tests 1 to 3. If one of the regular examinations is the lowest score, it will be dropped and the final will count 200 points. If the final examination is the lowest score, then all four examinations will count 100 points each. Thus the course grade will be determined on the basis of 400 possible points. No make-up tests will be given. If you miss a test for any reason, then your final will automatically count 200 points. If you miss more than one test a make-up examination will be given at my discretion. Minimally, a written doctor's or judge's note and notification prior to the quiz (via phone or e-mail) will be needed for any missed quiz to be made up.

Note that the last day to withdraw from the course without getting a WF is Friday, June 21.

**Students with Disabilities:** If you have any special needs, please inform the instructors within the first week of classes so that accommodations can be made.

**Independent Effort:** Students are referred to <http://www.luc.edu/media/lucedu/cas/pdfs/academicintegrity.pdf> for the CAS Statement on Academic Integrity. Students are advised to download and read the statement as it will be part of the governance of their efforts in the course. In addition, as pre-professional students at Loyola University Chicago, it should be obvious at this stage of your careers that all answers on examinations must arise from independent, honest efforts. Nothing less is acceptable in the Land of Lincoln. Thus, any student found cheating on any examination will receive an automatic "0" for that examination. His (her) name will be reported to Prof. Castignetti, the Chairperson of the Biology Department, Prof. Mota de Freitas, the Chairperson of the Chemistry Department, as well as to the Dean of the College of Arts and Sciences, who will decide whether further disciplinary action is necessary. We remind you that such an incident will become part of one's personal record and may be transmitted to organizations such as medical schools, dental schools, pharmacy programs, graduate programs, etc. Together, we encourage you to become the best that you can be, and will work with you to achieve that goal.

**Appropriate In-class Behavior and Electronic Devices:** This course is one with a large enrollment. It is incumbent upon you, as a student, to maintain a professionalism and code of conduct appropriate with the course material and course enrollment. To this end, rude, disruptive behavior (such as talking during class, viewing computer materials not concerning class subjects, etc...) **will not be tolerated**. It is acceptable to use laptops or comparable devices (tablets, iPads, etc.) for taking notes in class. Voice recording but not visual recording is allowed. Cell phones, pagers, wireless PDAs, etc. must be turned off during class. If your device is activated during class, you must leave the class immediately and cannot return for the duration of that class period.

**Sakai:** I plan to use the Sakai website (see link on LUC website) for all class notes and announcements. Please ask me for a handout for instructions on how to use this site if you are not already familiar with it. It is essential that you access the site regularly to do well in this class.

**Help Sessions:** We will have a discussion section for the hour before each exam to answer last minute questions you have on the material. If there are a lot of questions, these discussions can go longer until everyone is satisfied that they understand the material. This is in addition to the regular office hours.

**Problem:** I will be posting problem sets followed by answers. I hope that these are a help in preparing for the examinations.

**Examinations:** The examinations will all be multiple choice questions.

**Chem 461:** Graduate students and undergraduates contracting this course for honors will also do a homology modeling assignment.