

Principles of Biochemistry

CHEM 361/461

Fall 2016

Dr. Miguel A. Ballicora (Instructor)

Lectures: MWF 8:15 am – 9:05 am (Cudahy Hall, Room 202).

Discussion sections: Either Tuesday 10:00 – 10:50 am (Cuneo Hall - Room 116) or Tuesday 11:30 am - 12:20 pm (Dumbach Hall - Room 125).

Major Themes

This course will be about general and fundamental concepts in Biochemistry. We will discuss and learn about distinctive areas that are critical for the chemistry of life processes. These are chemical reactions that are essential to sustain life as a whole in the planet. Main focus will be on critical metabolic pathways and the structure of molecules and biopolymers that make them possible. The course will involve lectures by the instructor and discussions.

Tentative schedule

In a separate sheet, there is the intended schedule for the lectures. The schedule is tentative as it may slightly change to accommodate the most appropriate lecturing pace. The academic schedule for the University is here

<http://www.luc.edu/academics/schedules/>

Discussion sections

There will be an opportunity in all discussion sections for the students to ask questions, but many of these sessions have activities planned for them.

Discussion sections are an integral part of the course and the students are expected to participate actively in them. You should attend the section that you registered for.

Website and professor-student communication

Sakai (<http://sakai.luc.edu>) will be used for announcements, grades, and other information. Students are responsible to check *Sakai* as well as the Loyola e-mail account at least once a day. To contact the instructor, the students should e-mail him from their Loyola e-mail account. They should include somewhere in the subject line the word "CHEM361". Otherwise, it is quite likely that the message may be overlooked. The student could also e-mail the instructor directly from *Sakai*.

Participation

The instructor strongly encourages the students to participate in class and interact with other classmates after class. To facilitate the communication, a discussion forum will be set up in *Sakai*. Students can post questions, answers to other student questions, and/or anything related to the course.

Reading assignments

The reference book is *Biochemistry* by Campbell & Farrell, 8th edition (Cengage Learning). It is expected that the student have read the corresponding chapter for that particular lecture *before* class (see schedule).

Lectures

We will not have time to lecture on every single topic of each chapter, but will highlight the most important and essential concepts. These concepts will be emphasized on examinations but the students are responsible for the whole content of the chapter, besides the lecture and discussion material.

Grading

These are the five items that will constitute the final score for the course:

A. Quizzes/Assignments/Discussion work	10%
B. Mid-term examination 1	20%
C. Mid-term examination 2	20%
D. Mid-term examination 3	20%
E. Final <i>cumulative</i> examination	30%

Even though the midterms are not intended to be cumulative, some concepts from previous units may be integrated into questions from the new unit.

There will be three different options to compute the final score of the course. All options will be calculated and the student will get the highest of the three.

Option 1: Standard calculation based on the weights given above. For instance, if each grading item listed above (A to E) has an individual score of 100 points, the calculation will be $Course\ Score = 0.1 A + 0.2 (B + C + D) + 0.3 E$

Option 2: Worst midterm is dropped. If MT_{top} is the score of the best midterm and MT_{sec} is the second best score of the midterms then,
 $Course\ Score = 0.1 A + 0.26 (MT_{top} + MT_{sec}) + 0.38 E$

Option 3: The worst score midterm is replaced by a number based on the final exam performance. If X is the score of the student in the final, X_m is the median score of the whole class in the final, and MT_m is the median score of the whole class in the midterm to be replaced (MT_{rep}), then $MT_{rep} = MT_m X / X_m$. Of course, this replacement cannot be higher than 100. Once MT_{rep} is calculated, then *Course Score* = $0.1 A + 0.2 (MT_{top} + MT_{sec} + MT_{rep}) + 0.3 E$

The final score of will be rounded, and the letter assigned according to:

Letter	Range
A	90-100
A-	85-89
B+	80-84
B	75-79
B-	70-74
C+	65-69
C	60-64
C-	55-59
D+	50-54
D	45-49
F	44 and below

There will be no make-up examinations under any circumstance for mid-term exams. Options 2 and 3 were designed to contemplate any type of possible problem that will prevent the student to attend one of the midterm exams.

There will be no make-up examination for the final unless there is a **documented** family or medical emergency (or any other compelling reason such as jury duty).

Online quizzes and other assignments

There will be online quizzes and small assignments. Some of them may be during the discussion sessions. These activities will worth some points that will accumulate throughout the course. There will be at least 10 points worth of accumulated activities, but no more than 20. At the end of the course if the student accumulated 80% of the maximum possible points, he/she will obtain full credit for item "A" of the course grade (10% of the course score according to the table above). This is similar to say that roughly 20% of the quizzes/assignments are dropped. This takes into account any problem that student could have in completing the quiz or assignment (e. g. loss of internet connection). Thus, there will be no make-up for any missed quiz or assignment at all.

Expected behavior

Any work from the student must come from his/her independent and honest efforts. A student found cheating will receive an automatic "0" or F at that particular examination (which cannot be dropped). Serious violations of academic integrity may even cause the students to get an F in the course. Any violation must and will be reported to the Chair of the Department and the Dean of the College. They will decide whether further disciplinary action is necessary.

Use of cell phones or any other distracting devices are not allowed in class. During the exams, students are not allowed to use any type of electronic device (laptop computers, cell phones, smart phones, smart watches, radios, calculators etc.) unless the instructor specifically authorizes them. They should be left at the front of the class and should not be near the student at any time during the tests. Failure to follow this policy may be considered an attempt to cheat and will be dealt accordingly. Please note the policies about academic integrity from the College: <http://www.luc.edu/cas/advising/academicintegritystatement/>

Recording of lectures is not allowed unless specifically authorized by the instructor.

Special accommodations

Students, who may need special accommodations that are regulated by the University, and that need the instructor's attention, should contact the instructor within the first week of class. Examples of this type of accommodations are the ones related to University-sponsored activities for student athletes and students with learning disabilities.

Amendments

The instructor reserves the right to correct or amend this syllabus at any time. However, if that occurs, the students will be informed.

Instructor's contact information:

Dr. Miguel A. Ballicora
Flanner Hall 405 • Phone: 508-3154 • e-mail: mballic@luc.edu

Office hours:

They will be on Monday and Wednesdays from 9:30 to 10:30 am. Special meeting hours could be arranged by appointment.

Week Day Date Topic Ch.

1	M	08-29	Intro/Life	1.8-
	W	08-31	Life/Water	2
	F	09-02	Water	2

2	M	09-05	Labor Day	
	W	09-07	Amino acids & Peptides	3
	F	09-09	Amino acids & Peptides	3

3	M	09-12	Protein Structure	4
	W	09-14	Protein Structure	4
	F	09-16	Protein Purification	5

4	M	09-19	Protein Purification	5
	W	09-21	TEST #1	
	F	09-23	Bioenergetics	15

5	M	09-26	Bioenergetics	15
	W	09-28	Bioenergetics/Enzymes	15/6
	F	09-30	Enzymes	6

6	M	10-03	Enzymes	6
	W	10-05	Enzymes	6
	F	10-07	Enzyme Regulation	7

7	M	10-10	Midterm Break	
	W	10-12	Enzyme Regulation	7
	F	10-14	Biological membranes	8

8	M	10-17	Biological membranes	8
	W	10-19	TEST #2	
	F	10-21	Carbohydrates	16

Week Day Date Topic Ch.

9	M	10-24	Carbohydrates/Glycolysis	17/18
	W	10-26	Glycolysis	17
	F	10-28	Glycolysis	17

10	M	10-31	Carbohydrate Metabolism	18
	W	11-02	Carbohydrate Metabolism	18
	F	11-04	TCA cycle	19

11	M	11-07	TCA cycle	19
	W	11-09	TCA cycle	19
	F	11-11	Ox. Phosphorylation	20

12	M	11-14	Ox. Phosphorylation	20
	W	11-16	TEST #3	
	F	11-18	Lipid Metabolism	21

13	M	11-21	Lipid Metabolism	21
	W	11-23	Thanksgiving Break	
	F	11-25	Thanksgiving Break	

14	M	11-28	Lipid Metabolism	21
	W	11-30	Nitrogen Metabolism	23
	F	12-02	Nitrogen Metabolism	23

15	M	12-05	Cell signaling	24
	W	12-07	Cell signaling	24
	F	12-09	Review	

16	Thu	12-15	FINAL EXAM 9-11 am	
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