



Instructor: Dr. Polina Pine

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Office Location: FH-403

Office Hours: M/W 10:30-11:30am

Lectures: MWF 12:35-1:25pm Cuneo 210

Discussions: Fr 10:25 – 11:15am Cuneo Hall 003

Fr 11:30-12:20pm Cuneo Hall 003

Best (the fastest) way to contact Dr. Pine is in person during the office hours, before the lecture or before/after the Discussion Session. If email is sent after 5pm during business days it may be answered the next day or within 24 hours.

Course Overview

Prerequisite: CHEM 221 or 223. This is the first part of a two-semester Biochemistry series that emphasizes important biochemical concepts on the structure and function of proteins, enzymes, carbohydrates, lipids and cell membranes as well as on the bioenergetic and regulatory principles behind the central and carbohydrate pathways.

Outcome: Students will be able to demonstrate an understanding of structural-functional relationships in biological molecules and how carbohydrates are metabolized.

Topics discussed in classes include: kinetics, mechanism of enzymatic reactions and the central metabolic pathways of carbohydrates. Students who successfully complete this course will be able to do the following, at an acceptable level (including but not limited to): Identify and describe biomolecules including carbohydrates, amino acids/proteins and lipids/lipid bilayers. Choose appropriate buffer system; calculate the ratios of weak acid to conjugate base; determine the pKa from the associated titration curve; Show the major form of an amino acid/polypeptide including the zwitterion, at different pH values; track the fate of an oxygen molecule from inhalation in the lungs, track the fate of a carbon dioxide molecule produced from the TCA cycle, identify the kinetics of an enzymatic process; identify the substrates, enzymes and products in both catabolic and anabolic metabolism; track the fate of pyruvate and acetyl-CoA through the TCA cycle; track the fate and path of high-energy electrons through the electron transport complexes/respiratory chain, in conjunction with the Chemiosmotic principle of proton translocation utilized in oxidative phosphorylation to synthesize ATP.

Textbook and material (please follow the explanation given during the first lecture):

1. **The class lectures and discussions will be the most critical source of information for this course.**
2. **Reference textbook: Berg, Tymoczko, Gatto and Stryer, Biochemistry, 9th Ed.(please contact the bookstore)**
3. *Supplementary textbooks for the class include:*

- a) Pratt, Cornely, *Essential Biochemistry*, Wiley ISBN: 978-1-119-31933-7 (or any earlier edition)
 - b) Dean R. Appling, Spencer J. Anthony-Cahill, Christopher K. Mathews, *Biochemistry: Concepts and Connections*; Pearson (2nd or 1st edition)
 - c) *Biochemistry*, Campbell/ Farrell/ McDougal, 9th ed. (or earlier ed.), Brooks-Cole, Cengage Learning, 2018
4. Laptop computer: Windows, Mac or Linux or Unix OS, install VMD free software (will be explained in class)

Course Topics **Our actual pace and the topics may vary from the schedule:**

Chapters from the textbook (first in the list by **Berg, Tymoczko, Gatto and Stryer**) to be covered 1-18 in the sequence: 1-3; 6-18; 4-5. Not all textbook sections will be fully covered or covered in the order the textbook dictates, so focus first on the material that is directly covered in lecture and assigned for homework and discussion handouts) *See Tentative Lecture Schedule posted on Sakai under Recourses. Students are expected to read related material from any textbook before and after each lecture.*

Learning procedure:

- **Absolutely no electronics in the classroom unless instructed by the professor (you will need a laptop on some Fridays)**
- **No Taking Photos**
- **No taking Videos**
- **No Audio recording**
- **No note taking devices and no note taking apps in the classroom.**
- Only positive, respectful behavior is tolerated in this class. Please see **Harassment (Bias)** section at the end of the Syllabus. If any not respectful behavior of any student towards other students or instructor is observed it will be reported.
- Using the computers, cell phones, smartwatches and tablets is NOT allowed. Must be kept in the bag and operated on silent mode during lecture and discussion unless instructed differently by the instructor.
- **To contact Dr. Pine by email put CHEM370 in the Subject field. If email is sent without this specific subject it may be sent to Spam and/or overlooked.**
- **It is student's responsibility to follow the announcements, and all policies of the class.**
- Make-up assignments, exams, quizzes are not available for this course. However to accommodate personal/professional/unplanned/planned circumstances special grading system was developed for students and is given in the Grading section below.
- Classes will be given as a combination of the following formats: board, multimedia, use of models, discussions, independent and facilitated case studies and problem solving.
- Dr. Pine's lecture slides if posted on Sakai may be doubling the material in the class or covering material that expected to be covered by students independently. Follow the announcements in class; ask Dr. Pine during the class, and after the lecture if anything remains unclear. **Communication is important.**

- Problems from the textbook if assigned will be related to the first textbook given above and only from the 9th edition..
- The material covered in class will combine information from the textbooks above (not necessarily complete chapter), recent scientific publications and supplementary texts. For this reason it is essential not to miss classes. Students are expected to read the textbook before and after each class based on the tentative schedule posted on Sakai under Resources.
- The study guides in form of problems kits/case studies (discussion handouts) if assigned will be posted on Sakai or brought to the class. Students must check Sakai/Resources on a daily basis. If assignments are posted on Sakai students must print these handouts, bring all of them to **every class** and follow all directions given in the handout. More details will be given in the Discussion.
- **Please note that materials from this course cannot be shared outside the course without the instructor's written permission (as reminded by the CAS Dean's Office memo, Jan. 2019).**

Make-up assignments are not available for this course. Contact a classmate for notes, sections/topics covered if you miss a class. **For success in this course, it is important to review your notes, read the textbook and look over the slides/material prior and after class, work on homework problems if assigned **every day**.** DO NOT FALL BEHIND. Attendance is not taken for credit but any absence or any not following the policies or announcements given in class may result in poor performance in class.

Due to the fast pace of the semester announcements given in class may not be necessarily doubled/tripled in any electronic form (email, Sakai etc.) It is student's responsibility to follow the announcements, and all policies or changes of the class.

Grading policy:

There are NO EXTRA ASSIGNMENTS NO MAKE-UP EXAMS OR QUIZZES. Under no circumstances may an exam/quiz be taken at a time and date other than that assigned.

The midterm and final letter grades will be given based on the points scored in the course only (no curving, only absolute points). All exam points are converted into percentages. The lectures are supplemented by the Discussion session; each Discussion Handout (DH) is worth 1 point. Getting the credit for the Discussion Handout is based on following the format of both the Discussion Handout and Class Participation. You must attend and participate in the Discussion to get maximum 1 % points for the DH. If you do not submit the DH in person no points will be granted. During the Discussions that do not require the submission of the DH no points are given, but the material discussed in the session is essential for the course and the exams. These points for the DH are added to the score of the following unit-exam, but not the final exam. **More details will be given in the first Discussion.**

To take into consideration students' personal circumstances (weddings, funerals, sicknesses, jury duties, conferences, clinical shifts, bad exam day, bad luck, luck of time etc.) two options of the final score calculation were developed. If you miss one unit exam *for any reason*, the missed exam will be dropped and Option 2 will automatically be used to determine your grade. In this option the lowest

score of the midterm exam is substituted with the Final Exam score if higher. A second missed unit exam will result in a score of zero for the missed exam.

There are NO EXTRA ASSIGNMENTS NO MAKE-UP EXAMS OR QUIZZES. Under no circumstances may an exam/quiz be taken at a time and date other than that assigned. Final score for every student will be determined from one of the following options whichever is higher:

Option1:

Project	10%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Final Exam	30%
Total	100%

Option2 (Lower unit-exam score is a drop):

Project	10%
Unit Exam	20%
Unit Exam	20%
Final Exam	50%
Total	100%

Approximate grading scale (letter grade is related to percentage scored in the class):

<i>A</i>	<i>A-</i>	<i>B+</i>	<i>B</i>	<i>B-</i>	<i>C+</i>	<i>C</i>	<i>C-</i>	<i>D+</i>	<i>D</i>	<i>F</i>
100-90	89-85	80-84	75 -79	70-74	65-69	60-64	55-59	50-54	40-49	less than 40

Only mistakes such as tallying up points by the lecturer are eligible for regarding.

Every unit exam is 50 minutes, and given during the following dates: September 16th, October 14th, and November 11th exact dates are given in the tentative schedule posted on Sakai. Even though the midterms are not intended to be cumulative, some concepts from previous units may be integrated into questions from the new unit. **If you miss one unit exam for any reason, the missed exam will be dropped and Option 2 will automatically be used to determine your grade.** A second missed unit exam will result in a score of zero for the missed exam. There are NO EXTRA ASSIGNMENTS NO MAKE-UP EXAMS OR QUIZZES. Under no circumstances may an exam/quiz be taken at a time and date other than that assigned.

Students with documented evidence of the time extension must take the exams in the SAC center ONLY with prior arrangement (usually at least one week before the exam). There will be no possibility to accommodate the extra time outside of the SAC center. The start time of the exam must be the start time of the actual lecture or scheduled in such a way that the time of the exam of the student taking the exam in the SAC center starts earlier (not later) and overlaps at least half an hour with the exam time of the class.

Final exam has to be taken during the scheduled time only! Final exam: two hours MANDATORY. The final exam must be taken ONLY on the date scheduled or a grade of F will automatically result. Cumulative final exam is two hours duration. **Final exam is on Friday December 13rd 9:00-11:00am.** For the exact day and time check here:

http://www.luc.edu/academics/schedules/spring/exam_schedule.shtml)

All exams will be graded within seven business days. Students must pick up their score reports or exams (if available) during a specific Discussion or as announced (usually within one week after the

scores are published **during the times announced by the instructor only**. **No exams may be picked up after the aforementioned timeframe**). Issues with multiple-choice portion of graded exams must be submitted within seven calendar days of being returned; short-answer portion (free response) concerns must be discussed right after the exams being returned, otherwise scores will be considered final.

A link to the official Loyola calendar can be found here:

<http://luc.edu/academics/schedules/index.shtml>

The Exams procedure

Phones, headphones, tablets, smart watches and any electronic devices **are not permitted and must be left in a bag on a silent mode**. Come to the exam with **three** items: working **HB-2 pencil(s)**/pens/erasers, calculator, and your **Loyola ID** visible on your desk to be checked during the exam.

All purses, bags, jackets, wallets, cases, etc must be left at front of the room. Once the exam is distributed, if you exit the room for any reason before time is up, your exam is complete and will be collected.

Exam booklet pages cannot be detached. If detached it is student's responsibility for lost/not-graded portion.

Instructor Privileges

Instructor reserves the right to make changes and adjustments to this syllabus as necessary, including, but not limited to the grading policy and course schedule.

Academic Integrity

Trust and integrity are important qualities in students. All submitted work must represent your own work and your own work only. Academic dishonesty of any kind, such as plagiarism and cheat sheets on exams, will not be tolerated. Any student caught cheating on an assignment in any way will receive a "zero" for that assignment and be reported to Chairperson of the Chemistry Department and the Dean School of Art and Science. For further information regarding the Academic Integrity policy and disciplinary procedures, refer to the Undergraduate Studies Catalog: http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Students seeking Special Accommodations (SAC)

If you have any special needs, please bring me an official letter from the Student Accessibility Center SAC in the first week of classes. The university provides services for students with disabilities. Any student who would like to use any of these university services should contact the Student Accessibility Center (SAC), Sullivan Center, (773) 508-3700. Further information is available at <http://www.luc.edu/sac/>.

Students with documented evidence of the time extension must take the exams in the SAC center ONLY with prior arrangement (usually at least one week before the exam). There will be no

possibility to accommodate the extra time outside of the SAC center. The start time of the exam must be the start time of the actual lecture or scheduled in such a way that the time of the exam of the student taking the exam in the SAC center starts earlier (not later!) and overlaps at least 30 minutes with the exam time of the class.

Tutoring Center

The CTAE offers several different programs each semester, including class-specific tutor-led small groups, Academic Coaching groups dedicated to general academic support, and a Study Buddy Directory for students seeking out more independent collaboration with other students in the same class or subject area. For more information refer to http://www.luc.edu/tutoring/Small_Group_Info.shtml

Harassment (Bias Reporting)

It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias. In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: <http://webapps.luc.edu/biasreporting>

Course Repeat Rule

Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and personally meet and obtain a signature from either the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

Loyola University Absence Policy for Students in Co-Curricular Activities:

Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation (develop standard form on web) describing the reason for and date of the absence. This documentation must be signed by an appropriate faculty or staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to give the student the opportunity to make up examination at another time that fits the class schedule and requirements (<https://www.luc.edu/athletheadvising/attendance.shtml>)