Loyola University Chicago

Principles of Biochemistry: CHEM 361; BIOL 366; Sec. 001; Monday, August 26, 2019 – Friday, December 06, Fall 2024; Lecture: **T, R**: **11:30 AM – 12:45 AM Flanner 133; Discussion**: ***002*** **W, 12:35 PM – 01:25 PM Flanner 007**; ***003*** **W, 01:40 PM – 02:30 PM Flanner 007; *004* W, 02:45 PM – 03:35 PM Flanner 007; Prerequisite: CHEM 222 or 224(226); Instructor**: Donald May: Contact: dmay4@luc.edu **Office**: Flanner Hall 403; **Hours**: **W 10:30 AM – 11:30 AM**

Textbook: Biochemistry, Campbell/ Farrell/ McDougal, 9th ed., Brooks-Cole, Cengage Learning, 2018

Method of Instruction: Lecture and discussion. Lectures may be supplemented with classroom discussion, use of molecular models, use of multimedia, and/or use of computer-based materials as well as individual and/or group problem solving. Supplemental suggested textbook homework problems, for each chapter may be given but are not to be turned in for grading. Discussions may incorporate explanation of theory, review of homework questions, review of or completion of lecture material. Graded exams will be returned as soon as possible. Issues with graded exams must be submitted within 5 days of being returned, otherwise scores will be considered final. Students must submit a signed statement requesting a review of the exam question, although the entire exam is now subject to being re-graded. Any single regrade will be considered the final score and no subsequent regrade request will be considered.

Grading: Semester grades will be determined by the following criteria: Exams will incorporate theory up to and including all lectures/discussions/homework, prior to the exam. Graded discussion handouts: 20 pts., 1-2 long-answer question(s) incorporating similar questions to previous exam questions; completed in group format submitting a single answer page graded (best 2/3) contributing 20% toward the final grade with individual due dates; the lowest score will be dropped; with any single, missed graded discussion handout, the associated zero score will be given and can serve as a single dropped score; additional missed handouts will be scored as zero and will not be dropped; Three (3) 50-minute, in-class unit exams; Each unit exam will have 125-150 points possible; There will be 25-30 multiple choice questions and 3-5 long answer questions of varying point values. The comprehensive final exam will be about 200-225 points and have a similar format to the unit exams. Final grades will be determined from one of the following exam contribution options, The best 2/3 graded discussion handouts = 20%; the best 2/3 unit exams = 50% (2@ 25% each); Comprehensive final exam = 30% Any subsequent missed in-class exams will be scored as zero. **No early and no make-up in-class exams; No make-up final exams will be given. No make-up discussion handouts. See attached schedule. Posting of Grades: Final course grades are posted only LOCUS. Each student will also receive a midterm grade via LOCUS, prior to the Withdraw deadline for the semester. Grades are only based on the criteria listed in the syllabus: no substitutions, and no additions. Grading Scheme:**

GRADED DISCUSSSIONS	**20%;**	
TWO UNIT EXAMS	**50%**	
FINAL EXAM	**30%***	***the final exam is mandatory to earn a passing grade**
Total score	**100%**	

A: 100% – 88.0% A-: 87.9% - 84.0% B+: 83.9% - 80.0% B: 79.9% - 76.0%
B-: 75.9% - 72.0% C+: 71.9% - 68.0% C: 67.9% - 64.0% C-: 63.9% - 60.0%
D+: 59.9% - 56.0% D: 55.9% - 52.0% F: < 52.0%

Students are not allowed to leave during exams. If you leave, you must turn in your exam and you will be considered finished with the exam. Students must turn in all exam pages when finished. Exams cannot be taken from lecture: see Academic Integrity Violations. Students must bring and present their Loyola I.D. for each exam. The instructor reserves the right to amend any or all the constituents, requirements and policies of this syllabus at any time.

SI information: There may be available a Supplemental Instruction (SI) study sessions available for this course. SI sessions are led by an SI leader, _____, who is a student that has recently completed a CHEM 361 course. Session attendance is open to all and is voluntary. Times and locations for the SI session can be found here: www.luc.edu/tutoring. Students who attend these interactive sessions find themselves working with peers as they compare notes, demonstrate, and discuss pertinent problems and concepts, and share study and test-taking strategies. Research shows students who regularly attend sessions can develop a better understanding of course concepts than those who do not. Students are asked to arrive with their Loyola ID number, lecture notes, and textbook.

Student Conduct: Only students officially enrolled in the course may attend. Students must attend the discussion for which they are officially enrolled. At all times students are expected to conduct themselves in a mature and professional manner, which includes but is not limited to: treating everyone in class with courtesy and respect, avoidance of extraneous comments and small group discussions during lecture. Eating, chewing gum/tobacco products and drinking (food items) are not allowed. Students are expected to take care of their personal/professional matters before lectures/discussions/exams. Additionally, radios, headphones, cell-phones or similar devices must be in silent mode and are not permitted during lectures/discussions/exams. If a cell phone rings (beeps, buzz, etc.) during discussions or lectures, the student will be asked to leave. Students missing lecture or discussion are responsible for obtaining the notes and related information from a classmate. Any power-point presentation utilized will be uploaded and made available on SAKAI. Not all contingencies can be listed but inappropriate conduct will be addressed. If a cell phone rings (beeps, buzz, etc.) during any exam, the exam will be collected and the student will not be allowed to continue, since this constitutes using an outside resource. Students are expected to take care of any professional/personal issues before the exams. Students are not allowed to leave the room during exams until their exam is handed in for grading. If you leave, you must turn in your exam and you will be considered finished. Please keep noises and sounds to a minimum. When leaving, be respectful and leave quietly. During exams, only religious caps/ hats/hoods are allowed: non-religious caps, hats, hoods, visors and so forth, will not be allowed to be worn during exams. All personal materials, besides pencils, calculators and erasers, will be put away. Other exam instructions will be given and thus it is expected that students will be on time and ready for the start of the exam. Students engaged in official university off-campus activities will need to make arrangements proactively for missed course assignments, in providing the appropriate signed documentation in advance of the date missed. The visual or audio recording of the lectures and discussions is allowed in general.

Academic Integrity: Consult the Undergraduate Studies Handbook for additional information. All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, which can be viewed at: https://www.luc.edu/cas/advising/academicintegritystatement/

A basic mission of a university is to search for and to communicate the truth as it is honestly perceived. A genuine learning community cannot exist unless this demanding standard is a fundamental tenet of the intellectual life of the community. Students of Loyola University Chicago are expected to know, to respect, and to practice this standard of personal honesty. Academic dishonesty can take several forms, including, but not limited to cheating, plagiarism, copying another student's work, and submitting false documents.

Any instance of dishonesty (including those detailed on the website provided above or in this syllabus) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. Evidence of cheating in this course will result in, at a minimum, a score of zero (which cannot be dropped from grade calculations) and penalty up to failure of the course. College policies include that instructors will report incidents of academic misconduct to their chairperson as well as to the Assistant Dean for Student Academic Affairs in the CAS Dean's Office. I will report incidents to the Chemistry & Biochemistry Department for further action(s)**.**

Academic Dishonesty also includes, but is not limited to, such infractions as:

- Obtaining a copy of tests or scoring devices
- Using another student's answers during an examination
- Providing another student questions or answers to or copies of examination questions
- Having another person impersonate the student to assist the student academically
- Impersonating another student to assist the student academically
- Representing as one's own work the product of someone else's creativity
- Using, or having available for use, notes or other unpermitted materials during "closed book" examinations
- Duplicating any portion of another student's homework, paper, project, laboratory report, take-home examination, electronic file or application for submission as accepting a copy of tests or scoring devices
- Having someone other than the student prepare any portion of the student's homework, paper, project, laboratory report, take-home examination, electronic file or application, other than for a teacher-approved collaborative effort.
- Permitting another student to copy any portion of another student's homework, paper, project, laboratory report, take-home examination, electronic file or application other than for a teacher-approved collaborative effort
- Using any portion of copyrighted or published material, including but not limited to electronic or print media, without crediting the source
- Any other action intended to obtain credit for work that is not one's own.

Anything submitted that is incorporated as part of your grade in this course must represent your own work, unless indicated otherwise. All exams are self-contained: closed book and closed note. No external materials/notes/books or personnel are allowed: no unauthorized resources. During exams, violations include but are not limited to: cell phone ringing, opening a book-bag or back-pack during an exam, using unauthorized notes or books, looking at another student's exam, talking to another student, opening and/or utilizing anything in your book bag without the instructor's consent, taking a copy of the exam from the room and so forth. Students caught cheating will receive a zero score for the exam and this exam will not be allowed to be dropped. Further actions will also result. Any student found to be in violation or cheating will, at minimum, be given a zero for the assignment/exam contribution and the incident will be reported to the Chemistry Department Chair and the Office of the CAS Dean. Depending on the seriousness of the incident, additional sanctions may be imposed.

Materials from the course cannot be shared outside the course without the instructor's written permission. Students may not be aware of copyright and intellectual property rights.

Course Practices Required: Attending all lectures and discussions on time; College-level writing skills on exams; Communication skills for discussion and articulation of questions; Completion of homework and reading assignments. It is recommended that the student read through each chapter before lecture and eventually work through the suggested problems.

Learning Objectives: Course introduces bio-molecule monomers, 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. 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 nucleotide/nucleic acids, lipids/lipid bilayer constituents; 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 two 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.

Student Accommodations: Loyola University provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with Student Accessibility Center (SAC), located in Sullivan Center, Suite 117. Professors receive the accommodation notification from SAC via Accommodate. Students are encouraged to meet with their professor individually to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to record class lectures to provide equal access to students with disabilities. Students approved for this accommodation use recordings for their personal study only and recordings may not be shared with other people or used in any way against the faculty member, other lecturers, or students whose classroom comments are recorded as part of the class activity. Recordings are deleted at the end of the semester. For more information about registering with SAC or questions about accommodations, please contact SAC at 773-508-3700 or SAC@luc.edu

Disability Accommodations: Students requiring accommodations at the University need to contact the Coordinator of Services for Student Accessibility Center (SAC), Sullivan Center. Accommodations are provided after receiving documentation from SAC Testing and allowance of a reasonable time frame for arrangements (minimally, one week in advance). Accommodations cannot be retroactive. Contact: http://www.luc.edu/sac/

Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC):
Students missing classes while representing Loyola University Chicago in an official capacity (e.g., intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes. Students 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
i.e., "Athletic Competition & Travel Letter" 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 to the professor in the first week of a semester. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to allow the student to take the examination at another time.(https://www.luc.edu/athleteadvising/attendance.shtml)
Students who will miss class for an academic competition or conference must provide proper documentation to their instructor as early in the semester as possible.
Accommodations for Religious Reasons: If you have observances of religious holidays that will cause you to miss class or otherwise effect your performance in the class you must alert the instructor *within 5 calendar days of the first class meeting of the semester* to request special accommodations, which will be handled on a case by case basis.
Health, Safety, and Well-Being On-Campus
Please be familiar with and adhere to all policies and protocols posted on the *Campus Info & Resources* site:
https://www.luc.edu/healthsafetyandwellbeing/campusinforesources/

Classroom Masking Policy: We will follow all University guidance and requirements for masking, including any updates made during the semester. It will remain a principle of this class-section that, out of respect for the health of housemates and others in regular contact with members of our community, we will be respectful of anyone who wears a mask in the classroom.

Other Items
• A link to the official Loyola calendar can be found here: https://www.luc.edu/academics/schedules/
• The Withdraw deadline for the semester is on Friday, NOVEMBER 01, 2024.
• Loyola is using SmartEvals to provide instructor & course feedback. OIE will send emails near the end of the term.

In general lecture, meetings may be recorded. The following is a mandatory statement for all courses in the College of Arts & Sciences (CAS). We will discuss class norms and standards during the first week and continue the discussion as needed throughout the semester.
Privacy Statement: Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.
Academic Calendar, www.luc.edu/academics/schedules
Important Dates: Monday, September 02: No classes: Holiday (Labor Day)
Monday, Tuesday, October 07, 08: No classes: Fall Break Friday**, November 01: Last day for "W" otherwise "WF"**
Monday, November 04: Spring 2025 registration; Wednesday-Friday, November 27, 28, 29: No classes: Holiday
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 obtain a signature from 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.

Lecture Outline (tentative / subject to change): **EXAM I: Tuesday, September 24; EXAM II: Tuesday, October 22; EXAM III: Tuesday, November 19; FINAL EXAM: TUESDAY, December 10, 09:00 AM – 11:00 AM**

Week		Date	Chapter	Topic
01	T	08/27	02	Water, pH, pKa
	R	08/29	02	Buffers; Henderson-Hasselbalch equation
02	T	09/03	03, 04	Amino Acids and Polypeptides Protein Structure and Non-covalent Interactions
	R	09/05	04	Protein Folding; Hemoglobin, Myoglobin
03	T	09/10	04	Protein Folding; Hemoglobin, Myoglobin
	R	09/12	06	Enzyme Action & Kinetics
04	T	09/17	06	Enzyme Action & Kinetics
	W	09/18		GRADED DISCUSSION
	R	09/19	09, 15	Nucleic Acid Structure, Bioenergetics **
05	T	09/24		EXAM I
	R	09/26	07	Enzyme Mechanisms & Regulation
06	T	10/01	07	Enzyme Mechanisms & Regulation
	R	10/03	08	Lipids & Membrane structure, transport
07	T	10/08		NO CLASS, FALL BREAK
	R	10/10	08	Lipids & Membrane structure, transport
08	T	10/15	16	Carbohydrates
	W	10/16		GRADED DISCUSSION
	R	10/17	05	Protein purification **
09	T	10/22		EXAM II
	R	10/24	17	Glycolysis
10	T	10/29	17	Glycolysis
	R	10/31	19	Citric Acid Cycle (TCA Cycle)
11	T	11/05	20	Electron Transport, Oxidative Phosphorylation
	R	11/07	20	Electron Transport, Oxidative Phosphorylation
12	T	11/12	18	Glycogen Metabolism,
	W	11/13		GRADED DISCUSSION
	R	11/14	18	Gluconeogenesis
13	T	11/19		EXAM III
	R	11/21	21	Fatty Acid Metabolism
14	T	11/26	23	Nitrogen Metabolism; Urea Cycle,
	R	11/28		NO CLASS, HOLIDAY (Thanksgiving)
15	T	12/03	23	Alanine-Glucose Cycle
	R	12/05	24	Integration of Metabolism
16	T	12/10		FINAL EXAM 09:00 AM - 11:00 AM