

Loyola University Chicago

Principles of Biochemistry: CHEM 361/461; BIOL 366; Summer I, 2017; May 23, 2017 – June 29, 2017

Sec. 001: T, W, R: 08:30 AM – 11:10 AM, Flanner Hall 007; 002 T, W, R: 12:00 PM – 02:40 PM, Flanner 007

Instructor: Donald May; Contact: dmav4@luc.edu Office: Flanner Hall 403; Hours: times by appointment

Textbook: Biochemistry, Campbell/ Farrell, 8th ed., Brooks-Cole, Cengage Learning, 2012, 2015.

ISBN: 978-1-285-42910-6

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 previous exam questions or completion of lecture material, if necessary. Graded exams will be returned as soon as possible. Issues with graded exams must be submitted at the next lecture after being returned, otherwise scores will be considered final. Students must submit a signed statement requesting a review of the exam question(s), although the entire exam is now subject to being re-graded.

Grading: Semester grades will be determined by the following criteria: Discussion handouts at 10% + 3 unit exams at 30% each = 100%. Exams will incorporate theory up to and including all lectures/discussions/homework, prior to the exam. Discussion handouts contributing 10% each, toward the final grade with the lowest discussion score dropped, with individual due dates announced. Three (3) in-class unit exams, each contributing 30% toward the final course grade. Each unit exam will have about 150 points possible. There will about 30 multiple-choice questions at 3 points each; 4 long- answer questions of varying point values. The third unit exam may incorporate 1-2 concepts from earlier material, in the long-answer section. There are no early and no make-up in-class/unit exams; No late discussion handouts/homework. For a single, missed in-class unit exam, the third exam will contribute 60% in determining the final course grade. The student must have a valid and verifiable reason for missing any exam, such as an extreme emergency or serious illness requiring hospitalization. Any make-up final unit exam will be in a different format. If a verifiable and valid reason cannot be provided, a zero score/zero percent contribution for the unit exam contribution will be recorded. Exam Dates (tentative): See attached schedule. Students who drop the co-req lecture must be receiving a grade of D or better in the lecture in order to continue in the co-req lab.

Final course grade assigned: A: 100% – 87.0% A- : 86.9% - 83.0% B+: 82.9% - 79.0%

B: 78.9% - 75.0% B-: 74.9% - 71.0% C+: 70.9% - 67.0% C: 66.9% - 63.0% C-: 62.9% - 59.0%

D+: 58.9% - 55.0% D: 54.9% - 51.0% F: < 51.0%

Students must bring and present their Loyola I.D. for each exam. Exams will not be distributed to students without proper ID. 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 cannot begin an exam and decide not to complete it. Students must turn in all exam pages when finished. Exams cannot be taken from lecture: see Academic Integrity Violations.

Student Conduct: Only students officially enrolled may attend: students must attend the section 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. 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: nonreligious 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. The visual or audio recording of the lectures and discussions is not allowed generally but exceptions can be made for extraordinary circumstances. For any missed lecture, students will need to get the lecture notes from a classmate.

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:

http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf

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. During exams, violations include but are not limited to: cell phone ringing, opening a book-bag or back-pack during an exam, copying another student's discussion handout and presenting it as your own work, using unauthorized notes or books, looking at another student's exam, talking to another student, taking a copy of the exam from the room and so forth. Students caught cheating will receive a zero score for the exam; for discussion component students will receive a zero percent contribution. Further actions will also result. Any student found to be in violation or cheating will, at minimum, be given a zero for the assignment/discussion component/exam 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.

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, 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, Identify a specific path of electrons in the respiratory chain complexes; identify the role of uncouplers and inhibitors

Disability Accommodations

Students requiring accommodations at the University need to contact the Coordinator of Services for Students with Disabilities. The instructor will provide accommodations after receiving documentation from SSWD and allowance of a reasonable time frame for arrangements (minimally, one week in advance). Accommodations cannot be retroactive. Information is available at: <http://www.luc.edu/sswd/>

Lecture and Exam Outline (tentative / subject to change)

**Schedule: Principles of Biochemistry Lecture, Chemistry 361/461; Biology 366, Summer I 2017;
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MAY/JUNE

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|----------------------------|--------------|--------------|--------|
| 22 | 23 CHP 02 | 24 CHP 02,03 | 25 CHP 03,04 | 26 |
| 29 NO CLASS Memorial Day Holiday | 30 CHP 04,05 | 31 CHP 05,06 | 01 CHP 06 | 02 |
| 05 | 06 EXAM I CHP 07 | 07 CHP 07,08 | 08 CHP 08,16 | 09 |
| 12 | 13 CHP 16, 09 | 14 CHP 09,15 | 15 CHP 15 | 16 |

JUNE

| Monday | Tuesday | Wednesday | Thursday | Friday |
|--------|-----------------------------|---------------|--------------------------------|------------|
| 19 | 20 EXAM II CHP 17 | 21 CHP 19 | 22 CHP 20 | 23 "W" Day |
| 26 | 27 CHP 18, 21 | 28 CHP 21, 23 | 29 FINAL EXAM | 30 |

In general, the last part of lectures will be utilized for discussion, which will start with about 30 minutes remaining. This will allow students to clarify questions from homework, previous lecture material and so forth.

Discussion handouts may also be given. Lectures will incorporate 50 minutes of time followed with a 10 minute break. Exams will generally cover all material up to and including material from the previous Thursday. All exams will begin promptly at the start of class and will be 50 minutes in duration. Lectures subsequent to exams will then continue 10 minutes after the completion of each unit exam. The lecture on June 28, 2017 will be a full lecture. The final unit exam can include previous topics and will be 2 hours in duration.