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**Class Meet:** TR 12:00-1:20pm @ UGLC 128      **Office Hrs:** After class TR 1:30-2:30pm or by appointment

**Scope:** A study of the fundamentals of Biochemistry including the building blocks of all proteins/ nucleic-acids/polysaccharides/lipids, the three-dimensional structure of proteins, protein and enzyme function, biological membranes, and signal transduction systems.

**Objective:** Students who complete this course will be able to: identify all four major types of biochemical building blocks and become familiar with their properties; describe protein structures; predict the functions of biochemical molecules; and using basic biochemical techniques, understand the principles as well as concepts of biochemistry learned in the class to analyze new and unfamiliar systems.

**Prerequisites:** Organic Chemistry (3221/3222/3321/3322 or 2124/2125/2324/2325).

**Class Meetings:** Tuesday & Thursday 12:00-1:20pm at UGLC 128  
(All cell phones, pagers, and audio of electronic devices should be turned **OFF** during class!!!)

- Required Materials:**
1. Lehninger *Principles of Biochemistry* 7<sup>th</sup> Ed.; Nelson and Cox; W. H. Freeman Company, New York, ISBN-13 options:
    - A. 9781319108236 (E-book with 6-month Sapling Learning Plus, online or bookstore);
    - B. 9781319251406 (E-book with 6-month Sapling Learning Plus and customer print Chapter 1 to 12 textbook, only at University Bookstore).
    - C. 9781319108328 (E-book with 24-month Sapling Learning Plus, online or bookstore);
    - D. 9781464187964 (the loose-leaf textbook, online or bookstore);
    - E. 9781319168988 (the hard-cover textbook, online or bookstore);Option A or B is for most students only need to take CHEM3330 (Fall 2018). Option C is for students who want to take both CHEM3330 (Fall 2019) and CHEM3332 (Spring 2020). Option D or E is for students who want to have a hard copy of the whole textbook.
  2. Students will need to do **BOTH** the on-lecture quizzes (Qz) and the **pre-lecture assignment (PLA)** to obtain their Q&P average scores that can be counted into their final scores. Students are highly encouraged to do the quizzes and PLAs. However, they have the option not to do it. Those students who decided not to do the quizzes and PLAs must take all four exams. See **Course Grading** section below.
    - A. Classic i>Clicker<sup>®</sup> will be required for all on-lecture quizzes. It is student's responsibility to purchase and maintain a working i>Clicker during the semester. Students have two weeks of time at the beginning of the semester to purchase and test their i>Clickers. Please carry spare batteries to every class to avoid missing quizzes. **FORGOTTEN I>CLICKER OR LACK OF BATTERIES OR I>CLICKER MALFUNCTION AFTER THE FIRST TWO WEEKS OF THE SEMESTER WILL NOT BE A VALID EXCUSE FOR MISSING QUIZZES!!!!**  
\* UTEP and the i>Clicker vendor have agreed that the students can use the on-line voting system i>Clicker Cloud without additional charge. However, i>Clicker (physical clicker) based voting is the only way for the on-lecture quizzes and i>Clicker Cloud will not be supported for on-lecture quizzes. The instructor cannot take response for technical difficulties or reliability issues of using i>Clicker Cloud.
    - B. Account on Sapling Learning Plus for all PLA. It is students' responsibility to purchase the service from [www.saplinglearning.com](http://www.saplinglearning.com) so that students can login and finish the on-line PLAs (ISBN Option A, B, and C above). It is students' responsibility to have required computer/network hardware and software to accomplish the PLAs. Students have two weeks of time at the beginning of the semester to test and try the Sapling website and two bonus PLAs to get familiar with the system without affecting their Q&P average score. **AFTER THE FIRST TWO WEEKS, NO INDIVIDUAL COMPUTER/NETWORK EXCUSE WILL BE TAKEN FOR MISSING PLAs.**
  3. Four Scantron sheets are needed for the four exams.

<b>Review Sessions:</b>	After the exams, students can review the exams during the office hours. However, there will be <b><u>NO REVIEW SESSIONS BEFORE EXAMS</u></b> . This class is a college 3000 level course and the materials of the class are extensive, which require students to study before and after each lecture. Each lecture will be a review one to highlight important concept and resolve common mis-concepts assuming students have already learned the material before the lecture. Questions should be addressed in class or office hours routinely, not before each exam.
<b>Quizzes, PLA &amp; Exams:</b>	<p>There will be quizzes, PLAs and exams, all can contribute to the final grade.</p> <p><i>Quizzes:</i> There will be a quiz given at every lecture that will also serve as a record of attendance. Quiz questions will be given at the very beginning of class. <b><u>PLEASE ARRIVE IN CLASS ON TIME AND REVIEW THE PREVIOUS LECTURE</u></b>. Furthermore, there will be several quiz questions during the lecture. <u>Bonus points</u> will be given for quizzes (see below in section of <b>Bonus Points</b>).</p> <p><i>PLAs:</i> There will be weekly PLAs that require students to read the materials <b><u>IN ADVANCE</u></b>. The PLAs are reviewed by the instructor but prepared, given, and graded by <i>Sapling Learning</i> Teaching Assistant.</p> <p><i>Exams:</i> There will be four exams. Each exam covers <math>\frac{1}{4}</math> (three chapters) of the materials.</p>
<b>Course Grading:</b>	<p>Final grades in the course will be determined using scores on quizzes, PLAs and exams.</p> <ol style="list-style-type: none"> <li>1. The quiz average score (70%) and PLA average score (30%) will be combined to contribute for one score as Q&amp;P score. Q&amp;P scores for the first two weeks will not be counted into final Q&amp;P score, however, they can serve as bonus points (see below in section of <b>Bonus Points</b>).</li> <li>2. The lowest score in Q&amp;P and four exam scores can be dropped and the remaining 4 scores will each contribute 25% of the final score. Letter grades will not be assigned for score of Q&amp;P and individual exams. The actual score of Q&amp;P and individual exam will be converted to number of points for the final score. Students are highly encouraged to attend the class, take the quizzes, and do the PLAs to obtain their Q&amp;P average scores, which normally are their highest scores in all five scores. Students who choose not to attend the class, not to take the quizzes, and not to do the PLAs cannot drop any of the four exams and must take all of them.</li> <li>3. Depending on the overall performance of the class, letter grade will be assigned based on the final score. After the second exams, the criteria for assigning the letter grade will be set and announced in the middle of the semester before the class-withdraw deadline. The criteria will not be changed till the end of the semester. All the daily quiz scores, Q&amp;P average score, exam scores and current rank of the student in the class will be posted on Blackboard anonymously. Individual PLA scores will be available on <i>Sapling Learning</i> website (<a href="http://www.saplinglearning.com">www.saplinglearning.com</a>).</li> </ol>
<b>Class Attendance:</b>	<p><b><u>CLASS ATTENDANCE IS HIGHLY ENCOURAGED:</u></b> Attendance will be taken at each class using <b>UTEP student ID cards, the daily i&gt;clicker quizzes, and randomly called questions</b>. Students are responsible for attending lecture regularly and knowing what takes place during classes. This includes not only the material covered in the class, but also all announcements, such as changes of the syllabus, change of exam dates, etc.</p> <p><i>Attendance will be taken at each class meeting using UTEP student ID cards. Card readers are located at the entrance of the classroom. When student enter class, simply holds UTEP ID card against the reader. It may not be necessary to remove the card from student's wallet or purse. If the light on the device turns green, the ID card has been read properly and student attendance has been recorded. If the light remains red, the device was unable to read student's ID card; please present it again gently until the green light appears. If student do not see the green light, the UTEP ID card might need to be taken out from the wallet or purse to ensure that it is detected. Student's attendance will be recorded up to <u>15 minutes before and 15 minutes after</u> the class is scheduled to start. If student arrives too earlier, please rescan the ID during the 30-minute window. If student arrives too later outside the recording window, student should contact the instructor immediately after the class.</i></p> <p>In addition, attendance will be routinely taken in the form of the daily quiz and questions asked during the lecture. Students will be called by name randomly to answer questions. <u>If the student is absence when he or she is called but his or her student ID and quiz voting appears in the collected data, the student will be considered as suspected cheating and will be reported accordingly</u> (see <b>Academic Integrity Policy</b> section below).</p>

If student MUST miss a class, he or she need to make a special effort to learn what occurred during his or her absence. If the student choose to do the Q&P, in order to minimize the effects of the absence to his or her quiz average and semester attendance bonus points, student needs to submit verifiable documents to be approved by the instructor for the absence to get documented absences (DAs). Letters or emails from the student who will be absence cannot serve as valid document for the absence. Without approved documents, zero score will be included in the quiz average and the student will lose his or her semester attendance bonus. Absence documents that are submitted two weeks later than the absence date will NOT be accepted. Student's first absence will be automatically waived (waived absence, WA) without counting its zero score in the quiz average. However, the student does lose points for semester attendant bonus (see below in section of **Bonus Points**).

**Bonus Points:** Every student can earn bonus points as shown below. **NO EXTRA CREDITS** will be given.

1. *Daily quiz bonus:* Bonus points equal to one question will be given for each lecture to who answer all the questions (*lecture attendance bonus*). Additional bonus points equal to one question will be given for each lecture to who answers all quiz questions correctly (*lecture champion bonus*).
2. *Semester attendant bonus points:* Bonus points will be given to students' Q&P average score:  
5 points if the student attends all the classes;  
4 points if the student attends all the classes except documented absence (DA); or  
2 points if the student attends all but one class (one waived absence but no other missing class except document absence).
3. Before calculating the quiz average score, the lowest quiz score will be dropped if the student does not have any WAs or DAs.
4. The lowest PLA score will be dropped before calculating the average. Missing PLA (zero scores) will not be treated as lowest score.
5. The scores of PLA and quizzes for the first two weeks will be added to the student's average score calculation only if they are higher than the student's semester average.

**Quiz, PLA and Exam Policies:**

1. *Quiz Rules:* Students are allowed to look their textbook. Instructor may encourage discussion for certain questions before the quiz. However, during the quiz, students are not allowed to talk to their classmates. Asking classmates to take the quiz will be treated as cheating.
2. *PLA Rules:* Students will have several days (normally one week in advance) to finish the PLAs. The PLA will be due in Monday evening except special announcements. NO EXTENSION OF DEADLINE will be given individually after the due time because the correct answers will be available to all students after the deadline. It will be unfair to other students who finished the PLA before the deadline.
3. *Exam Rules:* Students should wait outside the exam room before instructor finish preparing the room. Students will be **assigned** to their seats by the proctors. **Remove baseball caps.** Do not look around. No talking, no joking, no sharing of pencils and erasers. All belongs except pencil, eraser, Scantron sheet, and the photo ID must be put on the floor on the side or in front of the classroom, away and out of sight. **NO calculators or other electronic devices including cell phones or other electronic communication devices or methods (wrist watches, earbuds, etc.) are allowed. No wristwatch or other electronic device may be worn.** Cellular phone and all other electronic devices must be turned off and put away. Only pencil, eraser, and Scantron sheet are allowed to be used during the exam. **Keep a photo ID visible on the desk at all times.** Students are highly suggested to go to the restroom before the exam. During exams, students will not be allowed to leave the examination room until they complete the exam. This includes restroom breaks. If student arrives late, he or she will only have the remaining time to finish the exam. If student arrives more than 20 minutes late to an exam, she or he will not be allowed to enter the examination room unless prior arrangements are made with the instructor. Do not disrupt students around if the student finishes the exam earlier. Once the exam is handed out, the student must leave the exam room and is not permitted to come back to continue the exam. Suspicious activity will be dealt with accordingly (see **Academic Integrity Policy** section below). Proctors have the rights to re-seat the students. Instructors and/or proctors may record and/or use their personal cell phones to document activity during the exam. Recording devices may also be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

4. To drop an exam, the student must have taken the exam or prepare documents before the exam to state his or her dropping. **NO ZEROS WILL BE DROPPED!**
5. **THERE WILL BE NO MAKE-UP TESTS/EXAMS IN THIS COURSE!** The missed exam will be the one the student drops if the student has a **DOCUMENTED EXCUSED ABSENCE**. The documents must submit and approved **BEFORE** the exam. This rule has been followed for 11 years with more than 2,500 students without any exception. Please do not ask for MAKE-UP TESTS/EXAMS.
6. **ONLY ONE** score in Q&P average and four exams can be dropped.
7. Please go over exams when the students come to review them and check for adding/grading errors. Except for clerical errors, re-grade requests will be a re-evaluation of the entire exam. Be aware that returned Scantrons have been photocopied prior to handing back!

**Academic Integrity Policy:**

As a part of the zero-tolerance policy, suspected cases or acts of alleged scholastic dishonesty (CHEATING) in quizzes, PLAs or exams will be dealt with University regulations. This means automatic referral to any adjudication by the Dean of Students. For example, during the exam, if student has a cellphone or other electronic device capable of communication that on the student and does not put away; or if any instructor or proctor sees or hears any electronic device during the exam or if student share his or her work with someone else, the student will be reported to the proper authorities and the student may receive a zero on the exam/quiz and an F in the class. If the student is suspected of scholastic dishonesty, the student may not be directly confronted about his or her conduct by the instructor or by the proctors. However, the student will be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and his or her exam will not be admissible. The student's grade in the class may not be available until OSCCR makes a final ruling, this may adversely impact the student's ability to enroll in other classes. Other actions including suspension may also be perused following University regulation.

**Withdrawal Policy:**

There is a deadline (Nov. 1<sup>st</sup>) after the Exam 2 for student to withdraw from any course with an automatic "W". Please note that it is the students' responsibility to officially withdraw from the course. The College of Science (CoS) aligns with UTEP with respect to the drop date and will not approve any course withdrawals after that date. There are always extenuating circumstances such as a death in the family or an illness; therefore, CoS will approval a complete withdrawal of all courses – not just one course in these cases. Biochemistry I (CHEM 3330) is a 3000-level course that is very demanding and challenging. Students need to spend a lot of time to study the material outside the classroom. Please consider withdraw before the deadline seriously when students cannot improve their scores because they cannot afford enough time to study. The grades of Incomplete "I" must be accompanied by an Incomplete Contract that has been signed by the instructor, student, departmental chair, and the dean. The CoS requests the contract be limited to one month based upon completion data. A grade of "I" is only used in extraordinary circumstances confined to a limited event. If the student has missed a significant amount of work (e.g. multiple assignments or tasks), a grade of Incomplete is not appropriate or warranted.

**Disability:**

If student has a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at <https://www.utep.edu/student-affairs/cass/>. As per UT System policy, CASS staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities. Please ensure the instructor receive the letters of accommodation at the beginning of the semester. The student also needs to arrange a meeting with the instructor no later than the first two weeks of the semester to discuss the reasonable accommodation. Accommodation must be coordinated in advance with the instructor.

**Academic Dispute**

When dispute between a student and the instructor happens, the student is referred to university policies: <http://catalog.utep.edu/undergrad/academic-regulations/student-life-policies-and-procedures/>. For complaints solely involving a grade dispute that doesn't require referral to University's Equal Opportunity office, the recommended process in the Department of Chemistry and Biochemistry is as follow:

1. The student must first discuss the issue with the instructor to seek a satisfactory resolution.
2. Having failed to resolve the matter after consultation with the instructor in Step (1), the student can bring the dispute to the attention of the Department of Chemistry and Biochemistry Chair, who will:

- a. Verify that the student has already sought resolution in Step (1) above. If the student has not taken Step (1), the Department Chair will refer the student to the instructor before proceeding further.
- b. Discuss with both the instructor and student, try to resolve the dispute.
3. If a satisfactory resolution was not achieved in Step (1) and (2) above, the student can bring the matter to the attention of the College of Science, following all guidelines of the COS student academic complaint process.
4. If a satisfactory resolution was not achieved in all steps above, the student should bring the complaint to the Student Grievance Committee of the Faculty Senate no later than one (1) year after the official grade has been released to the student, or in the case of a student who has graduated, no later than three (3) months after the degree has been conferred.

### **Tentative\* Schedule for material to be covered**

<b>Events</b>	<b>Date</b>	<b>Assignment</b>
Introduction	Aug. 27 <sup>th</sup>	First day of classes, Review syllabus, Intro to i>clicker and sapling homework.
Lecture 1	29 <sup>th</sup>	Chapter 1. The Foundations of biochemistry (1.1-1.2) (Page 7e1-14), Chapter 3 Amino acid (7e79)
<b>PLA** 1</b>	<b>Sept. 2<sup>nd</sup></b>	<b>Cover Lecture 1, 2 and 3**</b>
Lecture 2	3 <sup>rd</sup>	Chapter 1. The Foundations of biochemistry (1.2-1.3) (Page 7e15-26), Chapter 3 Amino acid (6e79)
Lecture 3	5 <sup>th</sup>	Chapter 1. The Foundations of biochemistry (1.3-1.5) (Page 7e27-40), PART1 (Page 7e45-46, Chapter 2. Water (2.1) (Page 7e47-48), Chapter 3 Amino acid (7e79)
<b>PLA 2</b>	<b>9<sup>th</sup></b>	<b>Cover Lecture 4 and 5</b>
Lecture 4	10 <sup>th</sup>	Chapter 2. Water (2.2-2.2) (Page 7e48-60), Chapter 3 Amino acid (7e79)
Lecture 5	12 <sup>th</sup>	Chapter 2. Water (2.2-2.5) (7e60-70), Chapter 3. Amino Acids, Peptides and Proteins (3.1) (Page 7e75-82)
<b>PLA 3</b>	<b>16<sup>th</sup></b>	<b>Cover Lecture 6, 7 and 8</b>
Lecture 6	17 <sup>th</sup>	Chapter 3. Amino Acids, Peptides and Proteins (3.1-3.3) (Page 7e83-92)
Lecture 7	19 <sup>th</sup>	Chapter 3. Amino Acids, Peptides and Proteins (3.4) (Page 7e93-109);
<b>Exam 1</b>	<b>24<sup>th</sup></b>	<b>Exam 1 12:00pm-1:20pm @ UGLC128</b>
Lecture 8	26 <sup>th</sup>	Chapter 4 The 3D structure of Proteins (4.1-4.3) (Page 7e115-129)
<b>PLA 4</b>	<b>30<sup>th</sup></b>	<b>Cover Lecture 9 and 10</b>
Lecture 9	Oct. 1 <sup>st</sup>	Chapter 4 The 3D structure of Proteins (4.3-4.4) (Page 7e130-151);
Lecture 10	3 <sup>rd</sup>	Chapter 5 Protein Function (5.1-5.3) (Page 7e157-164)
<b>PLA 5</b>	<b>7<sup>th</sup></b>	<b>Cover Lecture 11 and 12</b>
Lecture 11	8 <sup>th</sup>	Chapter 5 Protein Function (5.3-5.5) (Page 7e165-183)
Lecture 12	10 <sup>th</sup>	Chapter 6 Enzyme (6.1-6.4) (7e187-216)
<b>PLA 6</b>	<b>14<sup>th</sup></b>	<b>Cover Lecture 13, 14 and 15</b>
Lecture 13	15 <sup>th</sup>	Chapter 6 Enzyme (6.4-6.5) (7e217-236); Chapter 7 Carbohydrates and Glycobiology (7.1) (7e241)
Lecture 14	17 <sup>th</sup>	Chapter 7 Carbohydrates and Glycobiology (7.1-7.2) (Page 7e241-258);
<b>Exam 2</b>	<b>22<sup>nd</sup></b>	<b>Exam 2 12:00pm-1:20pm @ UGLC128</b>
Lecture 15	24 <sup>th</sup>	Chapter 7 Carbohydrates and Glycobiology (7.2-7.5) (Page 7e259-275); Chapter 8 Nucleotides and Nucleic Acids (8.1)(Page 7e279-281);
<b>PLA 7</b>	<b>28<sup>th</sup></b>	<b>Cover Lecture 16 and 17</b>
Lecture 16	29 <sup>th</sup>	Chapter 8 Nucleotides and Nucleic Acids (8.1-8.3)(Page 7e281-298);
Lecture 17	31 <sup>st</sup>	Chapter 8 Nucleotides and Nucleic Acids (8.3-8.4)(Page 7e298-313); Chapter 9 DNA-Based Information Technologies (9.1) (page 7e319-322)
<b>Drop day</b>	<b>Nov. 1<sup>st</sup></b>	<b>* Course Drop Deadline *</b>
<b>PLA 8</b>	<b>4<sup>th</sup></b>	<b>Cover Lecture 18, 19, and 20</b>
Lecture 18	5 <sup>th</sup>	Chapter 9 DNA-Based Information Technologies (9.1-9.3) (page 7e322-343);
Lecture 19	7 <sup>th</sup>	Chapter 9 DNA-Based Information Technologies (9.3-9.4) (page 7e344-356); Chapter 10 Lipids (10.1-10.2) (Page 7e361-371)
<b>Exam 3</b>	<b>12<sup>th</sup></b>	<b>Exam 3 12:00pm-1:20pm @ UGLC128</b>
Lecture 20	14 <sup>th</sup>	Chapter 10 Lipids (10.2-10.4) (Page 7e372-384); Chapter 11 Biological Membranes and Transport (11.1-11.2) (Page 7e387-401);

PLA 9	18 <sup>th</sup>	Cover Lecture 21 and 22
Lecture 21	19 <sup>th</sup>	Chapter 11 Biological Membranes and Transport (11.2-11.3) (Page 7e401-431);
Lecture 22	21 <sup>st</sup>	Chapter 12 Biosignaling (12.1-12.3) (Page 7e437-458);
Cancelled***	26 <sup>th</sup>	No Class***
Holiday	28 <sup>th</sup>	Thanksgiving Holiday, no classes
PLA 10	Dec. 2 <sup>nd</sup>	Cover Lecture 23 and 24
Lecture 23	3 <sup>rd</sup>	Chapter 12 Biosignaling (12.3-12.9) (7e458-476)
Lecture 24	5 <sup>th</sup>	Chapter 12 Biosignaling (12.10-12.12) (7e476-487)
Dead Day	6 <sup>th</sup>	Dead Day
Exam 4	10 <sup>th</sup>	Exam 4 1:00pm-2:20pm @ UGLC128

\* We may end up going slower or faster depending on how the class is doing. This table is our tentative plan. The exam dates can also be changed if we have unexpected delay.

\*\* PLAs are designed for you to study ahead of lectures. The lecture coverage listed in the table will be approximate which might be off because of balance between different PLAs and depending on the lecture progress.

\*\*\* Depend on the progress of the class such as we are way behind the schedule, we might have class on that day.