Course Title/Number: Biochemistry I/19256
Instructor: Dr. Yonghong Zhang
Term: Fall 2019
Web site: UTRGV Blackboard
Meeting Times: MW 9:30am - 10:45am
Location: ESCNE 2.108

Office: ESCNE 4.620
Office Hours: MW 11am-12:30pm/TR 9:30-10:30am
Telephone: (956) 665 2288
Email: yonghong.zhang@utrgv.edu

TEXTBOOK: Lehninger Principles of Biochemistry latest edition (7th or 6th Edition). This book should be available in three different formats with different prices: Hardbound Text, Loose-leaf Text ($186.99), and e-book ($76.99). The old versions of this book (5th or 4th) may be usable.


Other Course Materials: The course materials include the powerpoint file, pre-reading questions (Pre-Q), and practices for each chapter. All materials are only for students who register for this course and their own learning purposes.

COURSE DESCRIPTION & PREREQUISITES: This is an introductory biochemistry for undergraduates who have finished the course – organic chemistry I (CHEM 2302) and are interested in the chemistry of biological polymers and principles of enzymology, metabolism and bioenergetics. The course will mainly focus on a discussion of proteins, lipids, carbohydrates and nucleic acids from a structural and functional viewpoint, and also include study of energy yielding metabolic pathways such as glycolysis, the Krebs cycle, fatty acid oxidation and oxidative phosphorylation.

Course Learning Objectives:
Upon completion of this course students should:
1. know the general chemical structures and chemistry of the four classes of biological macromolecules (proteins, carbohydrates, nucleic acids and lipids) and their building blocks (amino acids, sugars, nucleotides and fatty acids) as well as the roles of these biological molecules in living cells.
2. know how to solve amino acid sequence of protein, nucleotide sequences of nucleic acids from experimental data and know structural recognition and identification of carbohydrates and lipids.
3. know the structure-function relationships of representative biological molecules, e.g. α-keratin, collagen, hemoglobin, DNA, RNA, cellulose, glycogen, starch, fatty acids, triglycerides, phospholipids, sphingolipid, cholesterol, Coenzyme A, NAD+, FAD, ubiquinone, etc.
4. know how to analyze enzyme kinetics data as well as the bioenergetics/thermodynamics of biochemical reactions.
5. know energy transduction in biological systems (e.g. glycolysis, TCA cycle, β-oxidation, electron transfer chain).
6. know the operation and inter-relationships of the basic metabolic pathways of carbohydrates, lipids, amino acids and nucleotides.
**GRADING POLICIES:** A course grade will be assigned based on student’s learning outcomes (i.e. student’s content knowledge, performance and effort), which will be assessed by exams, homework assignments, quizzes, etc. Students will need a picture I.D. to take an exam IN PERSON.

The final average grade will be determined by:
1. Pre-Q and practice assignments (Note: **all turn-in assignments have to be 100% completed!!!**): 20%
2. Best 3 out of 4 written exams: 20% each, total 60%
3. Final comprehensive exam: 20%
4. The **extra credit** assignments may be assigned to the entire class at the instructor’s own discretion. This will be discussed in class and reminders for due dates will be posted on Blackboard and sent to your UTRGV email.
5. **Students earned a grade of A from each of first four exams and turned in all required assignments are exempt** from the final comprehensive exam.

The grading scale is as follows:
- 100-90 = A; 80-89 = B; 70-79 = C; 60-69 = D; 59 and below = F

**Makeup Exam Policies:** A makeup exam can ONLY be given for some extenuating circumstances (e.g. an approved severe medical issue, official university events such as a member of the band for a concert or an athlete for a contest). Students will have to provide an approved evidence (e.g. printout with a signature) for a makeup exam. A notice must be sent by email to the instructor at least three days before the exam (except for a life-threatening emergency). Otherwise, a missed exam can NOT be made up. Note: a grade of zero will be recorded for any missed exams. A 0% is earned for the exam if student does not adhere to the above policy. Absolutely no makeup final exam will be given.

**UTRGV POLICY STATEMENTS**

**Students with disabilities:** Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact **Student Accessibility Services (SAS)** as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who experience a broken bone, severe injury, or undergo surgery during the semester are eligible for temporary services.

**Pregnancy, Pregnancy-related, and Parenting Accommodations:** Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

**Student Accessibility Services:**
- **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu.
- **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**Mandatory Course Evaluation period:** Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (https://my.utrgv.edu/); you will be contacted through email with further instructions. **Online evaluations will be available on or about November 14th – December 4th, 2019 for the Fall Semester.** Students who complete their evaluations will have priority access to their grades.

**Class attendance:** University policy requires that students attend all lectures. A student who misses three lectures without notice can and may be dropped from the course. Class attendance will be taken by a sign-in sheet form.

**Scholastic Dishonesty:** As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but
is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty will be reported to Student Rights and Responsibilities.

**Sexual Misconduct and Mandatory Reporting:** In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report to the Office of Institutional Equity & Diversity (oie@utrgv.edu) any instance, occurring during a student’s time in college, of sexual misconduct, which includes sexual assault, stalking, dating violence, domestic violence, and sexual harassment, about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct, discrimination, and all forms of violence. If students, faculty, or staff would like confidential assistance, or have questions, they can contact OVAVP (Office for Victim Advocacy & Violence Prevention) at 665-8287, 882-8282, or OVAVP@utrgv.edu.

**Course Drops:** According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time. **September 11th, 2019** – Census day (last day to drop without it appearing on the transcript). **November 13th, 2019** – Last day to drop a course and will count toward the “6-drop” rule.

**Appointments:** If you can demonstrate to me that you cannot meet during my Office Hours, then you can make an appointment to see me outside office hours, but it must be done 2 days in advance by e-mail.

**Q&A by Email and Email Policy:** Students are encouraged to send course-related questions to me by email and will receive prompt replies **DURING WORKING TIME**, but **NOT GUARANTEED OUT OF WORKING TIME**. In accordance with university policy, all email communication between the University and students will be conducted through the students’ official University supplied Mail account.

**Student Services:** Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email ([ucentral@utrgv.edu](mailto:ucentral@utrgv.edu)) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Advising Center, Career Center, Counseling Center, Learning Center, and Writing Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

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<thead>
<tr>
<th>Center Name</th>
<th>Brownsville Campus</th>
<th>Edinburg Campus</th>
</tr>
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<tbody>
<tr>
<td><strong>Advising Center</strong></td>
<td><strong><a href="mailto:AcademicAdvising@utrgv.edu">AcademicAdvising@utrgv.edu</a></strong></td>
<td>BMAIN 1.400 (956) 665-7120</td>
</tr>
<tr>
<td><strong>Career Center</strong></td>
<td><strong><a href="mailto:CareerCenter@utrgv.edu">CareerCenter@utrgv.edu</a></strong></td>
<td>BCRTZ 129 (956) 882-5627</td>
</tr>
</tbody>
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Schedule: please see the Tentative Class Schedule and Blackboard for the most up-to-date Schedule

THE UNIVERSITY OF TEXAS RIO GRANDE VALLEY
BIOCHEMISTRY I (CHEM 3303.01) Tentative Schedule Fall 2019

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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| 1    | Aug 26 | Introduction to the course / Chapter 1- The Foundations of Biochemistry  
Aug 28 | Chapter 1- The Foundations of Biochemistry  |
| 2    | Sept 02 Labor Day holiday, no class  
Sept 04 | Chapter 2-Water  |
| 3    | Sept 09 | Chapter 2-Water / Chapter 3 Amino acids, peptides and proteins  
Sept 11* | Chapter 3 Amino acids, peptides and proteins  |
| 4    | Sept 16 | Chapter 4- Three dimensional structure of proteins  
Sept 18 | Chapter 4- Three dimensional structure of proteins / Review Chapters 1-4  |
| 5    | Sept 23 Exam 1 over chapters 1, 2, 3, 4  
Sept 25 | Chapter 6 Enzymes  |
| 6    | Sept 30 | Chapter 6 Enzymes / Chapter 7- Carbohydrates  
Oct 02 | Chapter 7- Carbohydrates  |
| 7    | Oct 07 | Chapter 8- Nucleotides and nucleic acids  
Oct 09 | Chapter 8- Nucleotides and nucleic acids / Review Chapters 6, 7, 8  |
| 8    | Oct 14 Exam 2 over chapters 6, 7, 8  
Oct 16 | Chapter 10- Lipids  |
| 9    | Oct 21 | Chapter 10- Lipids / Chapter 13- Principles of Bioenergetics  
Oct 23 | Chapter 13- Principles of Bioenergetics  |
| 10   | Oct 28 | Chapter 14- Glycolysis  
Oct 30 | Chapter 14- Glycolysis / Chapter 15- Regulation of glucose metabolism  |
| 11   | Nov 04 | Chapter 15- Regulation of glucose metabolism / Review Chapters 10, 13, 14, 15  
Nov 06 | Chapter 16- TCA cycle  |
| 12   | Nov 11 | Exam 3 over chapters 10, 13, 14, 15  
Nov 13* | Chapter 16- TCA cycle  |
| 13   | Nov 18 | Chapter 17- Fatty acid catabolism  
Nov 20 | Chapter 17- Fatty acid catabolism  |
| 14   | Nov 25 | Chapter 19- Oxidative phosphorylation  
Nov 27 | Chapter 19- Oxidative phosphorylation / Review Chapters 16, 17, 19  |
| 15   | Dec 02 Exam 4 over chapters 16, 17, 19  
Dec 04 | Final Exam Review  |
| 16   | Dec 11 | Comprehensive final exam, 8:00 a.m. - 9:45 a.m.  
Dec 16 | Grades due by 3:00 p.m.  |

* Census day (last day to drop without it appearing on the transcript)  
* Last day to drop (DR grade) a class or withdraw (grade of W)