BS in Biomedical Sciences
Mission 1: Biomolecules
Mission Equivalency: BMED 1101, 1104
Fall 2016: 8/29–10/21/16

***This syllabus represents the current mission plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.*

TEXTBOOK AND/OR RESOURCE MATERIAL

All required content for this mission is paid for via mission fees and is delivered via iPad, which will be issued to you at your orientation meeting for the program. This learning material will include carefully curated readings, video, interactives, animations, apps, and other sources.

The following materials, and many others, are included:

- Principles of biology. Sapling Learning website. https://kitaboo.saplinglearning.com/reader/MobileReader/cloud-reader/kitaboo-reflowable.html#/main/https;%7C%7Ckitaboo.saplinglearning.com%7CContentServer%7Cmvc%7Cs3view%7C8816%7Chtml5%7C8816?readerType=new&subdomain=dynamicbooks&pageMode=single&page=8. Accessed May 7, 2016.

- Modern biology. Carnegie Mellon University website. https://oli.cmu.edu/jcourse/lms/students/syllabus.do?section=0d00aaa480020ca600b1ed77c5680214. Accessed May 7, 2016.

- Biomolecules. Khan Academy. https://www.khanacademy.org/test-prep/mcat/biomolecules. Accessed May 7 2016.

- MCAT prep. Khan Academy website. https://www.khanacademy.org/test-prep/mcat. Accessed May 6, 2016.

- Biochemistry videos. TED Ed website. http://ed.ted.com/lessons/the-twisting-tale-of-dna-judith-hauck. Accessed May 6, 2016.

- Translation simulation. SERC Pedagogic Service Project website. http://vcell.ndsu.nodak.edu/animations/translation/movie-flash.htm. Accessed May 6, 2016.

- Macromolecules skill check. Khan Academy website. https://www.khanacademy.org/science/biology/macromolecules. Accessed May 6, 2016.

- General and introductory biology, Sapling learning website
- http://www2.saplinglearning.com/introductory-biology. Accessed May 6, 2016.

Mission Description and Prerequisites

Welcome to the first step of your journey into the world of the biomedical sciences. As you reach each of your learning goals, you will develop the knowledge and skills necessary to contribute to the health and well being of many members of your community. You will also learn what the professionals in the field know about the inner workings of the human body and medicine. It will be a fascinating trip through one of the fastest growing areas of scientific study. In this first mission, you will study:

- The chemistry of living systems
- The simple elegance of the complex: Nucleic Acids and Protein Synthesis
- The way things work: Gene regulation and DNA technology

Learning Objectives/Outcomes for the Mission

As you complete the activities in this Mission, you will work toward demonstrating competence in each of these programmatic objectives:

- 1.B: Apply knowledge of biology in defining and discussing basic biomedically-related science concepts. (Level 1)
- 2.A: Describe the structure and function of the body and explain the basis of major pathologies and diseases at the molecular, cellular, organ, and system levels. (Level 1)
- 2.B: Critically examine the science behind disease prevention and health promotion, especially as related to common chronic conditions. (Level 1)
- 2.C: Recall the most relevant equations used in the biomedical sciences, describe the phenomenon they explain, and cite how and when they are applied. (Level 1)
- 4.A: Describe the social and environmental determinants of health and their influences on healthcare and biomedical research and discuss related impacts on individuals, communities, and populations - regionally, nationally and globally. (Level 1)
- 9.A: Demonstrate a desire to help others and sensitivity to others' needs and feelings. (Level 1)
- 9.B: Demonstrate knowledge of socio-cultural factors that affect interaction and behaviors; multiple dimensions of diversity; strategies for interacting effectively with people from diverse backgrounds. (Level 1)
- 9.C: Demonstrate ability to work collaboratively with others to achieve shared goals. (Level 1)
- 10.A: Behave in an honest and ethical manner; cultivate personal and academic integrity and adhere to ethical principles and follow rules and procedures. (Level 2)
- 10.B: Consistently fulfill obligations in a timely and satisfactory manner; take responsibility for personal actions and performance. (Level 2)
- 10.C: Set goals for continuous improvement and for learning new concepts and skills; solicit and respond appropriately to feedback. (Level 2)
- 10.D: Appropriately utilize campus, community, and other resources to help one succeed in the university setting, including progressive awareness of how and when to seek academic assistance or other professional support. (Level 2)

GRADING POLICIES

You will demonstrate your achievement of program competencies by completing the following types of activities. You must receive at least a 70% to receive credit for demonstrating competence.

You will complete the following kinds of activities as you work your way through the program:

Checks for Understanding (CFUs) are quiz-like questions with dynamic feedback so you and your instructors can monitor your progress and understanding of key concepts. These key concepts are foundational and key to your success in the biomedical sciences. **We recommend that you retake the checks for understanding until you are able to answer all of the questions correctly**. *You may receive 10 points for each check for understanding activity for a total of 160 points or 8% of your total grade. You may do check for understanding activities as many times as you like and the highest score you receive will be recorded.*

Practice Set consists of quiz-like questions with dynamic feedback designed to determine your knowledge and skills such as problem solving. *You may receive 40 points for each practice activity for a total of 240 points or 12% of your total grade. You may do practice activities as many times as you like and the highest score you receive will be recorded.*

Individual Readiness Assessment Test (iRAT) consists of quiz-like questions that will be done in class individually. The iRAT contains 10 multiple choice questions and is intended to assess your readiness prior to the team-based activity. *You may receive 30 points for each iRAT for a total of 180 points or 9% of your total grade.*

Team Readiness Assessment Test (tRAT) consists of quiz-like questions that will be done in class as a group. The tRAT contains 10 multiple choice questions and is intended to assess your readiness prior to the team-based activity. *You may receive 30 points for each tRAT for a total of 180 points or 9% of your total grade.*

Team-Based Learning activities (TBL) are completed in groups in class, but may require out of class preparation. These activities emphasize *integration* of content and concepts learned in other activities and emphasize diseases, conditions, and other aspects of human biology and health. *You may receive 65 points for the first TBL and 75 points for the remaining TBLs for a total of 440 points or 22% of your total grade.* All team-members receive the same grade.

Midterm is a comprehensive exam that covers all the content learned in Module 1, Units 1 and 2, and Module 2, Unit 1. You will take this exam in class and not on TEx. *You may receive 320 points for the midterm or 16% of your total grade.* ***No retake of the Midterm will be allowed****.*

Final Exam: The final exam will be comprehensive. After you have successfully completed all of the activities in the Mission, you will review what you have learned and take an exam that covers all of the content in Mission One. You will take this exam in class and not on TEx. *You may receive up to 480 points on the exam for a total of 24% of your final grade.* ***No retake of the Final Exam will be allowed****.*

Assessment	Total points	Percent
CFUS	160	8%
Practice	240	12%
iRAT	180	9%
tRAT	180	9%
First TBL	65	3%
All other TBL	375	19%
Midterm	320	16%
Final	480	24%
	2000	100%

Staying On Track

The TEx app on your iPad will help you keep track of your schedule of activity due dates and will let you know if you begin to get off track. Your Instructional Facilitator and Instructors will also be monitoring your work and are there to help you; contact them immediately if you start to struggle. If you get behind, don't give up—work with them to make a plan to get back on track.

Absence and Makeup Policy

Coached Study Hours and Class Activities are mandatory. If an excused absence is unavoidable, at the Instructor's sole discretion, students may complete an alternate assignment, which may include completing an individual version of the Team-based Learning activity or reading and summarizing a scientific article chosen by the Instructor.

CALENDAR OF EVENTS

The UTRGV academic calendar can be found at http://my.utrgv.edu at the bottom of the screen, prior to login. Important dates for Fall 2016 include:

August 29 Classes begin

September 5 Labor day, no classes

November 24- 25 Thanksgiving holiday, no classes

December 8 Study day, no classes

Note: Face-to-face and coach study hours days and times may vary.

Date	Day	Activity	Points	Contact
8/29/16	Week 1			
8/29	Mon			
8/30	Tue			
8/31	Wed			
9/1	Thur			
9/2	Fri			
* Dates/ Day varies		Syllabus Review		
* Dates/ Day varies				
9/5/16	Week 2	Module 1 Unit 1 – Atoms, Molecules, and Compounds		
9/5	Mon	Learn about atoms, molecules, and compounds Learn about water Learn about acids and bases Check for understanding (3X)	30	
9/6	Tue	Module 1 Unit 1 Practice Set	40	
9/7	Wed			
9/8	Thur			
9/9	Fri			
* Dates/ Day varies		<u>Coach study hours</u> Mini lecture of Module 1 Unit 1 Q&A		IF
* Dates/ Day varies		<u>Face-to-face</u> Individual Readiness Assessment Test (iRAT) Team Readiness Assessment Test (tRAT) Team-based learning (TBL)	 30 30 65	Professor
9/12/16	Week 3	Module 1 Unit 2 – Biomolecules: Carbohydrates, Lipids, Proteins, and Enzymes		
9/12	Mon	Learn about carbohydrates Learn about lipids Learn about proteins		

		Learn about enzymes Check for understanding (4X)	40	
9/13	Tue	Module 1 Unit 2 Practice Set	40	
9/14	Wed			
9/15	Thur			
9/16	Fri			
* Dates/ Day varies		Coach study hours Mini lecture of Module 1 Unit 2 Q&A		IF
* Dates/ Day varies		Face-to-face iRAT tRAT TBL	 30 30 75	Professor
9/19/16	Week 4	Module 2 Unit 1 – DNA and RNA		
9/19	Mon	Learn about basics of DNA and RNA Learn about DNA and RNA replication Learn about DNA mutations Check for understanding (3x)	30	
9/20	Tue	Module 2 Unit 1 Practice Set	40	
9/21	Wed			
9/22	Thur			
9/23	Fri			
* Dates/ Day varies		Coach study hours Mini lecture of Module 2 Unit 1 Q&A		IF
* Dates/ Day varies		Face-to-face iRAT tRAT TBL	 30 30 75	Professor
9/26/16	Week 5	Module 2 Unit 2 – Gene Transcription and Translation		
9/26	Mon	Learn about gene transcription Learn about gene translation Check for understanding (2x)	20	
9/27	Tue	Module 2 Unit 2 Practice Set	40	

9/28	Wed			
9/29	Thur			
9/30	Fri			
* Dates/ Day varies		Coach study hours Midterm	320	IF
* Dates/ Day varies		Face-to-face iRAT tRAT TBL	 30 30 75	Professor
10/3/16	Week 6	Module 3 Unit 1 – Gene Regulation		
10/3	Mon	Learn about prokaryotic gene regulation Learn about eukaryotic gene regulation Check for understanding (2x)	 20	
10/4	Tue	Module 3 Unit 1 Practice Set	40	
10/5	Wed			
10/6	Thur			
10/7	Fri			
* Dates/ Day varies		Coach study hours Mini lecture of Module 3 Unit 1 Q&A		IF
* Dates/ Day varies		Face-to-face iRAT tRAT TBL	 30 30 75	Professor

10/10/12	Week 7	Module 3 Unit 2 – DNA Technology		
10/10	Mon	Learn about cloning of DNA Learn about DNA technology Check for understanding (2x)	20	
10/11	Tue	Module 3 Unit 2 Practice Set	40	
10/12	Wed			
10/13	Thur			
10/14	Fri			
* Dates/ Day varies		Coach study hours Mini lecture of Module 3 Unit 2 Q&A		IF
* Dates/ Day varies		Face-to-face iRAT tRAT TBL	 30 30 75	Professor
10/17/12	Week 8	**Final exam week**		
10/17	Mon			
10/18	Tue			
10/19	Wed			
10/20	Thur			
10/21	Fri			
* Dates/ Day varies		Final Exam	480	
	Total		2000	

UTRGV POLICY STATEMENTS

Students With Disabilities:
If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. 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 accessibility@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 accessibility@utrgv.edu.

Mandatory Mission Evaluation Period:
Students are required to complete an ONLINE evaluation of this mission, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades.

Attendance:
Students are expected to attend all scheduled classes and may be dropped from the mission for excessive absences. UTRGV's attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

Scholastic Integrity:
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 mission and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, 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 incidents will be reported to the Dean of Students.

Sexual Harassment, Discrimination, And Violence:
In accordance with UT System regulations, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and so must report any instance, occurring during a student's time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this mission through writing, discussion, or personal disclosure. More information can be found at 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 in an environment free from sexual misconduct and discrimination.

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 missions during their undergraduate career. Missions dropped at other Texas

public higher education institutions will count toward the six-mission drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.