

UTRGV COURSE SYLLABUS

SPRING 2017

Mission 11
BMED 4250/4260 -2BR
Advance Cell Biology/Advanced Molecular
Biology
Hybrid Course
Term: Spring 2017
Meeting times and location:
Monday – Class 8:00 am - 10:30 am SABAL
HALL #96 2.110A Jan 17, 2017 - May 11, 2017
Lecture

Instructor Name: Michelle J. Zamarron
Instructor Office and Telephone BRHP 1.113
Phone:(956) 882-5046
Instructor Office Hours: Mon 10:-1:00pm, Tuesday 1-3pm; Friday 11:00-1pm or by appointment
Instructor Email: michelle.zamarron01@utrgv.edu

4250/4260 - Prerequisites: BMED 3101, BMED 3102, BMED 3103, BMED 3104, BMED 3105, BMED 3106, BMED 3107, BMED 3108, and BMED 3109 all with a grade of 'C' or better

*****This syllabus represents the current course plans and objectives. As we go through the semester, those plans may need to be change to enhance the class learning opportunity. Any changes made will be updated in the syllabus and communicated to the students.***

Textbook and/or Resource Material: Required Material

Molecular Biology of the Cell, Alberts et al. 6th edition, ISBN-10: 0815344325

ISBN-13: 9780815344322

Molecular Biology of the Gene, Watson et al. 7th Edition, 2013 book with “Mastering” Modified Pearson

MyLab/Mastering access Code (included in new edition of textbook – Molecular Biology of the Gene: Watson) for online homework assignments

Benjamin-Cummings Publishing Company, ISBN-10: 0321896564

ISBN-13: 9780321896568

I Clicker 2/ with 6 months Reef Polling access (available on Amazon)

Course Description

This advanced level course introduces students to the concept of protein targeting and its implication in human diseases. This advance level course employs knowledge of the general components of prokaryotic and eukaryotic cells to explain how different components of cells contribute to cellular and organism function. This course will include small group tutorials, lectures, problem based learning including discussions of clinical case studies which focus on Cell biology of the human body, and associated disease. The second half of the course is focused on Molecular biology components organized around the Central Dogma of Biology with presentations covering fundamental aspects of DNA and RNA structure, function, and interactions with proteins. This biomedical course focuses on the molecular processes involved in synthesis, maintenance and functions of macromolecules in health and disease. Material covered will include discussions of the physical and chemical properties that drive interactions of proteins with nucleic acids. This is used as a basis for understanding the material presented in the subsequent five modules, which cover DNA replication, DNA repair, gene regulation, transcription and translation.

Learning Objectives/Outcomes for the Course

- Apply knowledge of mathematics, biology, biochemistry, physics, and chemistry to understanding living systems. Display the ability to communicate scientific information clearly and precisely utilizing the terminology in the discipline.

Student Learning Outcomes

At the end of this course, the students are expected to be able to:

- Apply knowledge of biology in defining and discussing basic biomedically-related science concepts.

- Able to apply and link concepts learned in this course to other disciplines within the biomedical field
- When prompted, can adapt and apply knowledge and principles of mathematics and the sciences to draw conclusions about living systems in more complex situations.

Departmental Learning Outcomes

Departmental learning outcomes that are met by this course are:

- Students will be able to demonstrate a substantial factual knowledge base, a grasp of the major concepts of biochemistry, and will be able to relate them to the medical field
- Students will perform satisfactorily in standardized graduate examinations
- Students will be able to research a topic using standard electronic and non-electronic methods
- Students will be able to communicate complex scientific ideas, concepts, and theories by oral and written means
- Students will appreciate the role of research in the biological, biomedical, and clinical sciences

Course Pre-Requisites, Co-Requisites, and/or Other Restrictions

BMED 1101 and BMED 1103

Grading Policies

- ***10 (5points each) Individual and 10 (5points each) Team Readiness Assurance Test (iRAT (50 points total) and tRAT (50 points total), (100 points total towards final courses grade)***
At the beginning of class, you will be tested on the reading materials that you are supposed to go over before class. The iRAT/tRAT will begin 3rd week of class
- ***Team Based Learning (TBL)/In Class Activity (100 points) (Clicker Assignments/Coached Hour Activities)***
During class, you may be asked to perform an activity as a group that will help you further understand the objectives of the lesson of the week. If you do not attend class that day, you will get a zero for the in-class group activity. You may also be given homework for certain topics for the course which will be due at the start of the next class. **Late assignments will not be accepted.**
- ***Group Presentation (100 points)***
As a group, you will prepare and present a powerpoint presentation at the end of the semester. You will present and review a manuscript which involves a discovery (research article) involving a topic(s) in cell biology and molecular biology that we will go over in this course. Please make sure to get prior approval for the manuscript you have chosen. A rubric of the assignment will be shared with you later in the semester.
- ***MyLab Mastering Assignments (150 points)***
- ***Exams (550 points total)***
You will be taking 2 exams in this course which will be worth 250pts for midterm, and 300 points for final exam. The final exam will be a comprehensive exam.

Overall course total of 1000 points

Grades will be posted on Blackboard:

Final grades will be assigned per the following scale:

900-1000 A
800-899 B
700-799 C
600-699 D
Below 60 F

Attendance

Attendance to class is mandatory. If you miss class, you will get a 0 for the iRAT, tRAT and TBL for that day. If you have a valid reason for missing class, please try to inform me at least 1 hr before class if possible.

Course Evaluation Schedule

First week dead week (MLK holiday-NO CLASS)

Midterm dead week

Spring break dead week

13 active weeks

7 before midterm (Cell Biology Material)

6 after midterm (Molecular Biology Material)

Module 1 Review of cell and molecular biology : Textbook – Molecular Biology of the Cell, Alberts et al.

Module 1 Review of cell and molecular biology	Week 1 Jan 16 Monday MLK - NO CLASS
Unit 1 Molecules and Cells Review	<u>Monday 01/23/17</u> Unit 1 Molecules and Cells Review: Read over material posted and chapters
Subunit 1 Macromolecules	Subunit 1 Macromolecules
Subunit 2 Overview of cell structure and function	Subunit 2 Overview of cell structure and function
Unit 2 Cell structure and function, and techniques Subunit 1 Plasma membrane domains Subunit 2 Cytoplasm and organelles Subunit 3 Biotechnology	<u>Monday 01/30/17</u> Unit 2 Cell structure and function, and techniques
Module 2 Protein sorting, molecular motors, and cytoskeleton	<u>Monday 02/06/17</u> Module 2 Protein sorting, molecular motors, and cytoskeleton
Unit 1 Protein sorting Subunit 1 Nuclear transport Subunit 2 ER transport Subunit 3 Golgi transport Subunit 4 Plasma membrane transport Subunit 5 Lysosome transport Subunit 6 Mitochondrial transport	

<u>Unit 2 Molecular motors and Cytoskeleton</u> Subunit 1 Actin and myosin Subunit 2 Microtubules and Dynein and Kinesin	<u>Monday 02/13/17</u> <u>Unit 2 Molecular motors and Cytoskeleton</u> Subunit 1 Actin and myosin Subunit 2 Microtubules and Dynein and Kinesin
Module 3 cell communication and adhesion	<u>Monday 02/20/17</u> Module 3 cell communication and adhesion
Unit 1 Signal transduction Subunit 1 general principles Subunit 2 cell surface receptors Subunit 3 intracellular receptors and signaling cascade Subunit 4 GPCR signaling Subunit 5 Enzyme-coupled receptor signaling Subunit 6 Ion-channel coupled receptor signaling	
Unit 2 Cell junctions and extracellular matrix	<u>Monday 02/27/17</u> Unit 2 Cell junctions and extracellular matrix
Subunit 1 gap junctions, Subunit 2 tight junctions Subunit 3 cell adhesion Subunit 4 extracellular matrix Subunit 5 integrins and cytoskeleton	
<u>Monday 03/06/17</u> <u>Finish Subunits:</u> <u>Review for Midterm Exam</u> <u>Midterm March 10, 2017</u> <u>Spring break March 13-18</u> <u>Midterm Exam ON Blackboard</u> <u>All modules covered in Unit 1 and Unit 2.</u>	<u>Monday 03/06/17</u> <u>Finish Subunits:</u> <u>Review for Midterm Exam</u> <u>Midterm March 10, 2017</u> <u>Spring break March 13-18</u> <u>Midterm Exam ON Blackboard</u>

<u>Start Molecular Biology of Gene</u> <u>Monday 03/20/17</u> Module 5 Cell division Unit 1 DNA replication Unit 2 DNA recombination and repair	<u>Start Molecular Biology of Gene</u> <u>Monday 03/20/17</u> Module 5 Cell division Unit 1 DNA replication Unit 2 DNA recombination and repair
<u>Module 4 Material</u> Module 4 Nucleus, transcription factors, and gene expression Unit 1 Transcription in bacteria Subunit 1 Lac operon Subunit 2 Ara operon Subunit 3 Trp operon Subunit 4 Riboswitches	<u>Monday 03/27/17</u> <u>Module 4 Material</u> Module 4 Nucleus, transcription factors, and gene expression
Unit 2 Transcription in eukaryotes Subunit 1 Eukaryotic RNA polymerases Subunit 2 Promoters Subunit 3 Enhancers and silencers Subunit 4 Transcription factors Subunit 5 Transcription activators and inhibitors	<u>Monday 04/03/17</u> Unit 2 Transcription in eukaryotes
Unit 3 Post-transcriptional events Subunit 1 RNA processing and Splicing Subunit 2 Capping and polyadenylation Subunit 3 MicroRNAs and RNAi	<u>Monday 04/10/17</u> Unit 3 Post-transcriptional events
Unit 4 Translation Subunit 1 Bacterial translation Subunit 2 Eukaryotic translation	<u>Monday 04/17/17</u> Unit 4 Translation
Module 6 Apoptosis Unit 1 Apoptosis	<u>Monday 04/24/17</u> Module 6 Apoptosis Unit 1 Apoptosis

<u>Final Day of Class May 1</u> <u>Review For Final Exam</u>	<u>Monday May 1, 2017</u> <u>Final Day of Class May 1</u> <u>Review For Final Exam</u>
<u>Final Exam May 8th</u>	

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 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/home>); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

Feb 15 – Feb 21 for Module 1 courses

Apr 12 – Apr 18 for Module 2 courses

Apr 12 – May 3 for full spring semester courses

ATTENDANCE:

Students are expected to attend all scheduled classes and may be dropped from the course 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 course 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 course 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 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. for the third time.