

MISSION SYLLABUS

Genetics and Evolutionary Medicine

BS in Biomedical Sciences: Genetics and Evolutionary Medicine

Mission Equivalency: 1105, 1109

Spring 2017: 1/16–3/12

INSTRUCTOR & OFFICE HOURS:

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OFFICE HOURS:

T 9 AM – 11 AM

Thurs 11-1PM or by appointment

***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 course is paid for via course 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.

MISSION DESCRIPTION AND PREREQUISITES

Welcome to the next 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 mission, you will study:

- Basics of genetics
- Modes of inheritance
- Types of genetic variations and human diseases
- Human evolution and introduction to population genetics
- Phylogenetic inference
- Evolution of drug resistance

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LEARNING OBJECTIVES/OUTCOMES FOR THE MISSION

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

- 1.A: Use the language of mathematics and numerical relationships, including calculus and statistics, to analyze and discuss natural phenomena. (Level 1)
- 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 phenomena 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)
- 5.B: Review and evaluate prior research and related literature, and defend a rationale for which sources should be referenced. (Level 1)
- 5.C: Identify and develop biomedical science questions as they emerge in case-based activities and identify and apply relevant evidence to answer those questions. (Level 1)
- 7.A: Use information technology for gathering and processing biomedical or scientific information, managing information, and assimilating evidence from scientific studies. (Level 1)
- 9.A: Demonstrate a desire to help others and a sensitivity to others' needs and feelings. (Level 1)
- 9.C: Demonstrate an ability to work collaboratively with others to achieve shared goals. (Level 1)

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 60 points for each check for understanding activity for a total of 300 points or 15% 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.*

Five Unit Quizzes consist of quizzes designed to determine your preparation for the

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comprehensive final exam. *You may receive 100 points for each unit assignment for a total of 400 points or 20% of your total grade. The lowest grade of the five will be dropped.*

Explain Everything App (Draw and Explain) Using the Explain Everything App in CSHR, you will identify the components and steps involved in solving a genetics or evolution problem. These activities will require you to draw and explain the solution to a given problem. You will upload your work in iPad/TeX App and receive 30 points for each activity for a total of 150 points or 7.5% of your grade.

CSHR Quiz is a multiple choice quiz that will test your knowledge and understanding of the problem solved during CSHR. This quiz will be completed during the coach study hours and will be a series of 5–10 multiple choice questions. You will be able to take these questions only one time. *You may receive 30 points for each CSH quiz for a total of 150 points or 7.5% of your total grade.*

MCAT question of the week is an MCAT-style set of questions that are related to the concept of the week. You may receive 20 points for each set for a total of 100 points or 5% of your total grade.

Team-Based Learning (TBL) activities 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 the genetic and evolutionary basis of diseases, conditions, and other aspects of human biology and health. *You may receive 125 points for TBL activities for a total of 500 points or 25% of your total grade.*

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 400 points on the exam for a total of 20% of your final grade. **No retake of the Final Exam will be allowed.***

Assessment	Total Points	Percent
CFUs	300	15%
Unit Quiz	500 (lowest is dropped for a maximum of 400)	20%
Explain Everything	150	7.5%
CSH Quiz	150	7.5%
MCAT Question	100	5%
TBL	500	25%
Final	400	20%
Total	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.

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ABSENCE AND MAKEUP POLICY

Coached Study Hours and Class Activities are mandatory. If an excused absence is unavoidable, at the professor'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 professor.

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 Spring 2017 include:

January 17	Classes begin
March 13-17	Spring Break
April 14	Easter Holiday, no classes
May 4	Study Day, no exams
May 5-11	Final Exams

Date	Day	Activity	Points	Contact
1/16/17	Week 1	Module 1 Unit 1 – Genetic Variability-Part I		
1/16	Mon	Martin Luther King Holiday; university closed		
1/17	Tue	Learn about Cell division, Mendelian Inheritance, and Chromosome Theory of Inheritance 1.1 CFU: Genetic Variability Part One	60	
1/18	Wed	Learn about Cell division, Mendelian Inheritance, and Chromosome Theory of Inheritance 1.1 CFU: Genetic Variability Part One		
1/19	Thurs	Lecture 1.1 MCAT Quiz: Genetic Variability Part One	20	Prof
1/20	Fri	1.1 Unit Quiz: Genetic Variability Part One Due Sunday 1/22/2017 12PM, allocated time 30 min	100	
Dates Varies	Day Varies	Coach study hours Face-to-face session Q&A 1.1 Draw & Explain: Genetic Variability Part One (CSHR) 1.1 CSHR Quiz: Genetic Variability Part One	30 30	IF

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1/23/17	Week 2	Module 2 Unit 1 – Genetic Variability-Part II		
1/23	Mon	Learn about Sex linkage, Pedigree analysis, and Non-Mendelian Inheritance I 2.1 CFU: Genetic Variability Part Two		
1/24	Tue	Learn about Sex linkage, Pedigree analysis, and Non-Mendelian Inheritance I 2.1 CFU: Genetic Variability Part Two	60	
1/25	Wed	Learn about Sex linkage, Pedigree analysis, and Non-Mendelian Inheritance I 2.1 CFU: Genetic Variability Part Two		
1/26	Thurs	Lecture 2.1 MCAT Quiz: Genetic Variability Part Two TBL One: Hemophilia	20 125	Prof
1/27	Fri	1.2 Unit Quiz: Genetic Variability Part Two Due Sunday 1/29/2017 12PM, allocated time 30 min		
Dates Varies	Day Varies	Coach study hours Q&A Face-to-face session 2.1 Draw & Explain: Genetic Variability Part Two 2.1 CSHR Quiz: Genetic Variability Part Two	30 30	IF
1/30/17	Week 3	Module 2 Unit 2 – Genetic Variability-Part III		
1/30	Mon	Learn about Non-Mendelian Inheritance II, Multifactorial inheritance, types of genetic variations, mutagens and cancer genetics, and precision medicine 2.2 CFU: Genetic Variability Part Three		
1/31	Tue	Learn about Non-Mendelian Inheritance II, Multifactorial inheritance, types of genetic variations, mutagens and cancer genetics, and precision medicine 2.2 CFU: Genetic Variability Part Three	60	
2/1	Wed	Learn about Non-Mendelian Inheritance II, Multifactorial inheritance, types of genetic variations, mutagens and cancer genetics, and precision medicine 2.2 CFU: Genetic Variability Part Three		
2/2	Thurs	Lecture		Prof

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		2.2 MCAT Quiz: Genetic Variability Part Three TBL Two: My Sister's Keeper	20 125	
2/3	Fri	1.3 Unit Quiz: Genetic Variability Part Two Due Sunday 2/05/2017 12PM, allocated time 30 min		
Dates Varies	Day Varies	Coach study hours Q&A Face-to-face session 2.2 Draw & Explain: Genetic Variability Part Three 2.2 CSHR Quiz: Genetic Variability Part Three	30 30	IF
2/6/17	Week 4	Module 3 Unit 1 – Human Genetics and Evolution		
2/6	Mon	Learn about Population genetics and evolution 3.1 CFU: Population Genes		
2/7	Tue	Learn about Population genetics and evolution 3.1 CFU: Population Genes	60	
2/8	Wed	Learn about Population genetics and evolution 3.1 CFU: Population Genes	100	
2/9	Thurs	Lecture 3.1 MCAT Quiz: Population Genetics TBL Three: Evolution Case	20 125	Prof
2/10	Fri	3.1 Unit Quiz: Population Genetics Due Sunday 2/12/2017 12PM, allocated time 30 min		
Dates Varies	Day Varies	Coach study hours Q&A Face-to-face session 3.1 Draw & Explain: Population Genetics 3.1 CSHR Quiz: Population Genetics	30 30	IF
2/13/17	Week 5	Module 3 Unit 2 – Disease Susceptibility and Evolutionary Mechanisms		
2/13	Mon	Learn about Phylogenetic inference, and Evolution of drug resistance 3.2 CFU: Disease Susceptibility and Evolutionary Mechanisms		

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2/14	Tue	Learn about Phylogenetic inference, and Evolution of drug resistance 3.2 CFU: Disease Susceptibility and Evolutionary Mechanisms	60	Prof
2/15	Wed	Learn about Phylogenetic inference, and Evolution of drug resistance 3.2 CFU: Disease Susceptibility and Evolutionary Mechanisms		
2/16	Thurs	Lecture 3.2 MCAT Quiz: Disease Susceptibility and Evolutionary Mechanisms TBL Four: Evolution Case	20 125	Prof
2/17	Fri	3.2 Unit Quiz: Disease Susceptibility and Evolutionary Medicine Due Sunday 2/17/2017 12PM, allocated time 30 min	100	
Dates Varies	Day Varies	Coach study hours Q&A Face-to-face session 3.2 Draw & Explain: Disease Susceptibility and Evolutionary Mechanisms 3.2 CSHR Quiz: Susceptibility and Evolutionary Mechanisms	30 30	IF
2/20/17	Week 6	Review		
2/20	Mon			
2/21	Tue			
2/22	Wed			
2/23	Thurs	Review		Prof
2/24	Fri	Finals week starts* (Final exam date will be announced by Instructor, following UTRGV final exam schedule)		
Dates Varies	Day Varies			
2/27/17	Week 7	Final Exam Week		
Dates Varies	Day Varies	FINAL EXAM: 3 Genetics & Evolutionary Medicine	400	Prof
	Total		2000	

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INSTRUCTOR AND INSTITUTIONAL POLICY**FORMATTING**

In order to ease the peer review and submission processes, please use a font and text size that will make it easier for your readers to print and respond to your work. Additionally, when submitting drafts to your instructor, please save and submit your rough drafts in one of the following formats: DOC/DOCX, RTF, Google Docs. Submitted final drafts should be saved as PDF, JPEG, or some other final and universal format.

When you save your drafts, use the following naming convention: UTRGV username (your email address before the @ sign), assignment abbreviation (this will be announced with each assignment), due date. For example: azapata8 GA 06.15.15

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.

LATE WORK

Late work makes life hard for all of us (you, your instructor, your peers, the program, the department, the institution, etc.), so don't count on turning any in. If you know of an upcoming absence, complete and turn in your work early. The class is designed so that you can miss some work in an emergency without it destroying your standing in the class. However, given your busy calendar, you should endeavor to complete your work with some pace.

MATERIAL IN CLASS AND PUNCTUALITY

Bring everything to class every day, including your iPad, and be on time. If we start an activity and you don't have the necessary materials or walk in late, you won't be able to constructively contribute to the work we do in class.

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.

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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.