

UTRGV COURSE SYLLABUS

BS in Biomedical Sciences: BMED 4230 Human Genetics and Medical Genomics

Instructor Name: Dr. Chun Xu, MD, MSc, PhD

Fall 2017: Spring term

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Meeting times and location: **Thursday 3:05-4:45 pm, Room BSABH, 2.106**

Office location & hours: BRHP 1.120; Thursday 9-12:00 am and 4-5:00 pm. All others by appointment.

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 communicate with the students.

Textbook and/or Resource Material

Required:

- 1) **Thompson & Thompson Genetics in Medicine, Nussbaum, Robert L., 8th edn**
ISBN # 9781416030805, Saunders. Price: \$67.95

This textbook is required in University of Texas at Houston medical school.

Course Description and Prerequisites

This course will examine human genetics and medical genomics, including Mendelian and complex diseases, chromosomal abnormalities, heritability, genetic variations and methods for investigating associations with diseases, gene-environment interactions, population genetics, cancer genetics, and epigenetics. The new biomedical senior level course will include flipped classroom model (All assigned readings from textbook and/or papers are homework assignments), problem based learning and discussions of case studies.

Prerequisite:

Requires Approval of Departmental Advisor and satisfactory standing in the BS in Biomedical Sciences program.

Learning Objectives/Outcomes for the Course

Students should be able to **1)** understand and be able to use genetics and genomics terminology in human genetics problems and applications **2)** understand the methodology used in the study of human genetics and medical genomics to be able to apply this knowledge in problem based learning **3)** acquire critical thinking skills applied to human genetics research, translational applications and social implications **4)** link different areas and concepts of genetics to form a cross-disciplinary, integrated understanding of the field **5)** understand principles of evolution and selective pressures that lead to changes in population genetics and heritability; **6)** Able to research human genetics and genomics literature, critique and communicate in writing and in oral presentations.

Departmental learning outcomes that are met by this course are:

1. Students will be able to demonstrate a substantial factual knowledge base and a grasp of the major concepts of biological systems and be able to relate them to human anatomy/physiology in health and disease.
2. Students will perform satisfactorily in standardized graduate examinations.

3. Students will be able to research a topic using standard electronic and non-electronic methods.
4. Students will be able to communicate complex scientific ideas, concepts and theories by oral and written means.
5. Students will appreciate the role of research in the biological, biomedical and clinical sciences.

Grading Policies

Exams/Quizzes: Your learning will be assessed by **2** major examinations, a mid-term and a final. These examinations are multiple choice short answer, problem based passage style or genetics problems questions. Learning and preparedness will also be assessed by unannounced short quizzes covering the assigned work and readings and by pop quizzes throughout the lecture period. Also, writing assignments will be used to assess your learning. **Final exam is during final weeks on May 5-11, 2017 and it is comprehensive.**

Problem-Based Learning (PBL) consists of small group exercises of assigned problems or clinical scenarios in the BMED program. Participation in the group exercises is required to pass the course. These exercises will be open book, open notes, and open discussion. After a defined interval students may be assessed. On some occasions students will be quizzed before (individual) and after team based discussions (team based) to assess effectiveness of peer-based learning.

The grade will be calculated according to:

A. Two exams each having a weight of **25 %** each. **Total-50%**

B. Writing assignment **20%**: Written report (**In your own words (if plagiarized, you will get a zero)**) on an instructor approved genetic disease (Minimum 2-3 page, single spaced, 11-12 font Arial/Times New Roman) (**Should include background, biochemical/molecular genetic info, phenotype, genotype associated with disease risk/susceptibility/etiology/pathophysiology, type of inheritance pattern, ethnic differences, treatment options, ethical considerations-citations should be within text**). Bibliography should have a minimum of 15 citations in Clinical Genetics format-Due date 4/25/17 by 11pm CST.

C. Other Quizzes/Questions on problems and/or cases **30%** (15% team based score + 15% individual score). Teams will be assigned by instructor, and rearranged if instructor wants to at any point during the semester.

D. **Bonus points 10 pts (first place) and 5 points (second place)** to be added to final grade depending on peer judging of a 20 minute presentation by team + 10 minute for questions competition between 2 teams of assigned topics. **Topics should include background, biochemical/molecular genetic info, phenotype, genotype associated with disease risk/susceptibility/etiology/pathophysiology, type of inheritance pattern, ethnic differences, treatment options, ethical considerations.** These presentations will be judged based on adequate preparation by team, quality of power point slides and quality of verbal presentation by each team member, distribution of time (20 min) between team members and finishing on time, understanding of topic and ability to answer as revealed by questions posed by instructor (10 min). The instructor reserves the right to intervene and overrule judging if peer consensus is not present and/or instructor disagrees with judging. The teams will be the same as the Team-Based Learning (TBL)/PBL teams. The 2 opposing/competing teams will be randomly assigned. All students will participate in team presentations and judging.

Absence and Makeup Policy

If an absence is unavoidable, at the professor's sole discretion (and a documentable valid excuse), 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 or take a makeup exam. **There are NO makeups for mid-term or final exams or missing competition or paper.**

Other policies in class

Instructor reserves the right to request disruptive students to leave the classroom. Disruptive behavior includes constant joking with each other (if requested be prepared to share with instructor and class), chatting, texting, video/screen sharing etc. while the instructor is talking. Disrespectful behavior such as sleeping in class or disrespecting instructor or peers (by action or words or behavior) will not be tolerated.

BMED 4230 spring 2017 Calendar

Date	Topic	Activity
1/19/17	Review (Chapters 1-2) + Principles of Biology review	Review lecture, Baseline Quiz, TBL
1/26/17	Review (Chapters 3-4) + Principles of Biology review	Review lecture, review, TBL, Individual quiz
2/2/17	Review (Chapters 1-4) + Principles of Biology review	Review lecture
2/9/17	Chromosomal disorders (Chapter 6)	Lecture, Quiz,
2/16/17	Single gene inheritance (Chapter 7)	Lecture, TBL
2/23/17	Complex inheritance (Chapter 8)	Lecture, Individual quiz + TBL
3/2/17	Genetic Variation in Population (Chapter 9)	Lecture
3/9/17	Linkage and Genetic variation in complex diseases (Chapter 10)	Lecture, Quiz+ TBL
3/16/17	Spring Break. No classes	
3/23/17	Molecular Basis of Genetic Disease (Chapter 11)	Lecture, TBL
3/30/17	Midterm	Review materials + Chapters 1-4, 7, 8-11, Individual quiz
4/6/17	Developmental Genetics and Birth Defects (Chapter 14), Cancer genetics (Chapter 15)	Lecture, Quiz+ TBL
4/13/17	Precision medicine, Pharmacogenomics (Chapters 13,15 and 18)	Lecture, + TBL
4/20/17	Risk Assessment and Genetic Counseling (Chapter 16)	Lecture, Individual quiz + TBL
4/27/17	Student presentations by team	
5/4/17	Study Day. No classes	Paper due
May 5 – 11 /17	Final Exams	Comprehensive final-Everything

Calendar of Activities

Include in this section a table or list that provides information for students regarding important dates, assignments or activities. The UTRGV academic calendar can be found at http://www.utrgv.edu/_files/documents/admissions/utrgv-academic-calendar-2016-2017.pdf. Some important dates for Spring 2017 include:

Spring 2017 Term (January 17 – May 11)

Jan. 16 (Mon.)	Martin Luther King Jr. Holiday. No classes.
Jan. 17 (Tues.)	Spring classes begin. Official First Class Day
Mar. 13 – Mar. 18 (Mon. – Sat.)	Spring Break. No classes
April 14 – April 15 (Fri. – Sat.)	Easter Holiday. No classes.
May 4 (Thurs.)	Study Day. No classes
May 5 – 11 (Fri. – Thurs.)	Final Exams

Other Course Information

In this section, please provide any other information that is pertinent to your course and your expectations for students.

UTRGV Policy Statements [next page]

The UTRGV disability accommodation, mandatory course evaluation statement and sexual harassment statement are required on all syllabi. Additional policy statements are optional, such as those covering attendance, academic integrity, and course drop policies.

STUDENTS WITH DISABILITIES: *Required on all syllabi.* Do not modify.

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: *Required on all syllabi.* Do not modify.

Students are required to complete an ONLINE evaluation of this course, 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. Online evaluations will be available:

May 8 – May18 for full fall semester courses.

ATTENDANCE: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.

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: Recommended on all syllabi.

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: *Required on all syllabi. Do not modify.*

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: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.

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.