Syllabus
Genetics (BIOL 3320), Section 1
Fall 2023
The University of Texas at El Paso
Department of Biological Sciences

Course and Instructor Information

CRN:	10626
Delivery method:	In-person
Meeting day and time:	Tuesdays/Thursdays 1:30-2:50pm
Location	Union Building 109
Online material:	Blackboard course page
Instructor:	Dr. Mike Harvey, Assistant Professor
Written Communication:	Email (mgharvey@utep.edu), response within 24h M—F
Office location:	Biology 304
Office hours:	By appointment, in my office or on Zoom (email me first to arrange Zoom office hours). There is also time during class periods for questions.

Course Description

Have you ever wondered why you look like your parents? Or, what it means if your genetics puts you at risk for heart disease? Or, whether or not you should fork over $100 to sequence your own genome? Or, why people get cancer? Or, where mutations come from and how they affect individuals and species? Or, if scientists should be allowed to edit the genomes of other humans or other species? These are all questions relevant to the study of genetics, and all questions that I hope you will be able to answer at the end of this class.

The format of this class may differ from what you have experienced in previous courses. This is a flipped class. You learn most of the material for each module at home by reading the required handouts (lectures) and taking short reading comprehension quizzes to ensure you understand the information. Then, when you come to class, you apply your new knowledge by working through problems (with the help of me and your classmates) and participating in discussions. Any problems not completed in class will be finished at home on your own time. During class periods I also give mini-lectures to help with difficult topics and ask iClicker questions to give you the opportunity to test your knowledge and provide feedback. Research indicates that this flipped format helps you learn the material better, have more fun, and develop important professional skills like teamwork and communication.

Previously, this class has been delivered allowing for varying levels of remote participation. This fall it will be delivered in person. Although the readings, quizzes, and some problem set work are completed online, you are required to come to the in-class sessions. You are still allowed up to two weeks of absences, no excuse or permission required (see *Classroom Policies and Attendance* below).

Prerequisites: BIOL 1108 (Organismal Biology Lab), BIOL 1306 (Organismal Biology), BIOL 1107 (Topics in the Study of Life), BIOL 1305 (General Biology)

Student Learning Objectives

After finishing this class, you should be able to:

- Explain how cells in our body can look different even if they have the same genome
- Understand how mutations affect genotypes and how genotypes affect phenotypes
- Understand why parents and offspring sometimes (but not always!) look similar
- Explain the genetic basis of cancer
- Understand how genes evolve through time
- Discuss the social and ethical issues of genetics
- Solve genetic problems by using multiple concepts and logic
- Share your ideas with each other & with me in writing and out loud

Materials and Technology

There is no textbook for this course.

Hardware: A computer, tablet, or smartphone with internet connection is required for accessing online materials for the course both in and out of class. Problem sets may require a printer and scanner/camera if you prefer to work on paper rather than digitally on a pdf. If you do not have any of this equipment, loans or access are available from UTEP Technology Support (https://www.utep.edu/technologysupport/).

Software: Blackboard and iClicker (https://www.iclicker.com/) applications (both free for UTEP students). Other free websites/applications may be used during the course. Assistance with obtaining and installing these is available from UTEP Technology Support.

Communication

1. **Deadlines (for e.g., quizzes and problem sets) are posted on Blackboard** under each assignment. It is your responsibility to keep track of these. The exam dates are listed on the syllabus (also posted on Blackboard). Make sure to add these to your calendar!
2. **Questions:** First, ask questions to your peers. If they don't have the answer, try to ask your questions during class periods. Our class format is such that there are often opportunities to raise your hand and ask about either material or logistics (other students probably have the same question!). If that doesn't work, the best way to contact me directly is via email. If necessary, we can then arrange a one-on-one meeting/office hours.

Participation and Attendance

When you are working on materials for this class, come ready to learn. Eliminate distractions, arrive on time (for in-person classes/exams), and plan to focus on the material. This goes without saying, but be courteous to other students and the instructor, all of whom are dealing with their own challenges. Complete all work before the deadlines if you would like to receive credit.

Class absences: You are allowed to miss up to two weeks of class (four non-exam class sessions). I will automatically drop four iClicker sessions. **Do not email me to tell me about an absence, just don't come to class**. Class sessions will be recorded and posted on Blackboard so that you don't miss out on material.

Missed exams: You are allowed to miss one preliminary exam. If you require a makeup exam for one of the preliminary exams or the final exam, you must have an excused absence due to medical issues or a

religious observance. Written documentation of the excused absence must be provided within 2 days of the missed exam. A makeup of the final exam must be within 24 hours. Makeup exams will only be offered once to all students requiring a makeup.

Academic Integrity and AI

Presenting work that you did not do as if it's your own is strictly prohibited in this course. That said, the use of diverse resources as learning tools is encouraged. **You may use generative AI for all parts of this course except on exams and on problem set questions that ask for *your* opinion** (ChatGPT's opinion is not your opinion!). For more information on UTEP's policies, see the *Academic integrity statement* in the last section below.

Grading and Assignments

Individual quizzes (best 8 out of 9):	16% (80 points, 10 per quiz)
Problem Sets (8):	16% (80 points, 10 per problem set)
Semi-cumulative prelim. exams (best 2 of 3):	28% (140 points, 70 per exam)
Cumulative final exam (1):	20% (100 points)
In-class iClicker questions:	20% (100 points)
Total:	**100% (500 points)**

Quizzes: There will be a quiz for each module, including the mini-module (9 total). Before attending the first class of each module, you must review the background handout and answer the quiz on Blackboard. The questions will primarily be in multiple-choice format, similar or identical to the multiple-choice questions that will appear on the exams. Technically they are open-book, but the time limit will make it hard to complete a quiz if you don't know the material and need to refer back to the handout or the internet. The quizzes are to motivate you to read through and understand the background material, so be sure to complete the quizzes before the beginning of the appropriate class! One quiz will be dropped – if you miss a quiz I will drop that one, otherwise I will drop your quiz with the lowest score.

Problem sets: There will be a problem set for each of the modules in the class, not including the mini-module (8 total). These cover the key ideas from each module and provide practice with longer-format questions that are similar or identical to the multi-part questions that will appear on the exams. You can do these in groups, but you must submit answers individually and in your own words. The length of problem sets will vary depending on the amount of material covered and the time you have to do them. Problem set questions will be graded on completion (this means putting in effort, not scribbling down an answer). Problem sets are submitted on Blackboard as attachments, which means you either have to work on paper and scan/photograph your work or complete them digitally using a pdf editor.

Exams: You will have three semi-cumulative exams (70 points each) and one final individual exam (cumulative, 100 points) for the course. All exams will combine multiple choice questions (similar/identical to the quizzes and iClicker questions) with multi-part, long-answer questions (similar/identical to those on the problem sets). **Exams will all be paper exams delivered in person.** Multiple choice questions will be completed on a bubble sheet and essay questions will be written. You are required to bring your UTEP ID, scratch paper, and a pencil to each exam. A calculator (not a smartphone) is optional. One of the three preliminary exam scores will be dropped – if you miss an exam I will drop that one, otherwise I will drop your preliminary exam with the lowest score. The final exam cannot be dropped.

Attendance/iClicker questions: Most class days there will be at least one iClicker question or poll (and sometimes more). On days quizzes were due, there may be repeat questions from the quiz that you will have the chance to answer again after discussing with neighbors or doing some research. On other class days, there will be questions or polls administered at appropriate points within the class session. Some iClicker (polls) are just graded on participation, others require that you answer correctly. I will tell you which it is when I post each question. **iClicker questions are how we take attendance in this class.** I will drop four iClicker class sessions that either you missed or, if you didn't miss that many, that you missed the most points on.

Extra credit: There may be opportunities for extra credit offered during the semester. These will be offered to all students. There will be no opportunities for individual extra credit or extra credit on request.

I will try to post grades within one week of each assessment's due date. Grades are assigned according to a standard scale:

90 – 100+: A 80 – 89: B 70 – 79: C 60 – 69: D 0 – 59: F

Recommendations for Success

To be successful in class, my recommendations are to:

- Review the handouts before and after the quiz
- Do the problem sets & study with groups or classmates
- Come to in-person class & participate once you show up
- Study multiple times a week any material you found confusing
- Come to me during class with questions, or schedule office hours as needed
- Get excited about and pursue topics that interest you! Genetics is a diverse subject with something for everyone. If something piques your interest, explore it online (ask ChatGPT about it!) or look up folks at UTEP that might study that topic and reach out to them. Seriously, this makes learning so much better.

Tentative Schedule

Date	Class Session	Assessments Due	Preparation for Next Class (**B** = module handout)
29-Aug	Class Introduction	Pre-Assessm.	Handout Module 1
31-Aug	Module 1: Genomes, Chromosomes, and Genes	Quiz 1	
5-Sep	Module 1: Genomes, Chromosomes, and Genes		Handout Module 2
7-Sep	Module 2: Genes to Proteins & Mutations	Quiz 2	
12-Sep	Module 2: Genes to Proteins & Mutations	Problem Set 1	
14-Sep	Module 2: Genes to Proteins & Mutations		Handout Module 3
19-Sep	Module 3: Genotype to Phenotype	Quiz 3	
21-Sep	Module 3: Genotype to Phenotype	Problem Set 2	
26-Sep	**Exam 1 on Modules 1 – 3**	Problem Set 3 (due 25-Sep)	Handout Module 4
28-Sep	Module 4: Inheritance I, Single Gene	Quiz 4	
3-Oct	Module 4: Inheritance I, Single Gene		
5-Oct	Module 4: Inheritance I, Single Gene		Handout Module 5

10-Oct	Module 5: Inheritance II, Multiple Genes	Quiz 5	
12-Oct	Module 5: Inheritance II, Multiple Genes	Problem Set 4	
17-Oct	Module 5: Inheritance II, Multiple Genes		Handout Module 6
19-Oct	**Exam 2 on Modules 4 & 5**	Problem Set 5 (due 23-Oct)	
24-Oct	Module 6: Inheritance III, Linked Genes		
26-Oct	Module 6: Inheritance III, Linked Genes	Quiz 6	
31-Oct	Module 6: Inheritance III, Linked Genes		Handout Module 7
2-Nov	Module 7: Cancer, Population, & Evol. Genetics	Quiz 7	
3-Nov	**Drop deadline**		
7-Nov	Module 7: Cancer, Population, & Evol. Genetics	Problem Set 6	
9-Nov	Module 7: Cancer, Population, & Evol. Genetics		
14-Nov	Module 7: Cancer, Population, & Evol. Genetics		
16-Nov	**Exam 3 on Modules 6 & 7**	Problem Set 7 (due 20-Nov)	*Science* paper
21-Nov	Mini-Module: Phylogenomics	Mini-Module Quiz	Handout Module 8
23-Nov	**THANKSGIVING BREAK – NO CLASS**		
28-Nov	Module 8: The Next Frontier of Genetics	Quiz 8	
30-Nov	Module 8: The Next Frontier of Genetics		
5-Dec	Module 8: The Next Frontier of Genetics	Problem Set 8 (due 6-Dec)	
7-Dec	**Cumulative Final Exam (10:00am-12:45pm)**		

University Resources and Policies

Academic resources:
Technology Support Help Desk (https://www.utep.edu/technologysupport/)
Miner Learning Center (https://www.utep.edu/mlc/)
University Writing Center (https://www.utep.edu/uwc/)
UTEP Library (https://www.utep.edu/library/)
Center for Instructional Design (https://www.utep.edu/extendeduniversity/cid/student-resources/blackboard-orientation.html) - help with Blackboard issues
Military Student Success Center (https://www.utep.edu/student-affairs/mssc/)
Counseling and Psychological Services (https://www.utep.edu/student-affairs/counsel/)

Center for Accommodations and Support Services (CASS) statement: If you have a disability and require accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. Requested accommodations must be made 3 working days before an examination. All students requesting disability accommodations must request a meeting with the professor to discuss the details before they will be implemented, preferably at the beginning of the semester.

Academic integrity statement: Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are not attributable directly to the student, taking an

examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. The complete UTEP policy on academic integrity and scholastic dishonesty can be found at: https://www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html.

Statement of COVID-19 and other communicable illness: Please stay home if you have been diagnosed with COVID-19 or other highly communicable illness or are experiencing symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. UTEP is equipped to provide COVID-19 testing for symptomatic or vulnerable students. The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

Course withdrawal and incomplete grades: It is the student's responsibility to drop a course by the drop deadline by contacting the Registrar's Office (https://www.utep.edu/student-affairs/registrar/students/registration.html). Incomplete grades are reserved for exceptional circumstances.