BIOL 3500 Genetics Summer 2023

INSTRUCTOR: Dr. Carl Hjelmen Office: SB 242b

Class time information: 3500-001: Hybrid: Online and **T,R 10:00-11:15am in SB 280**.

Contact Information

Student Hours (office hours):

- In-Person: Tuesdays and Thursdays 12pm-1pm
- Online via. Teams by Appointment
- or by appt.

Phone: 801-863-8084 **E-mail:** Carl.Hjelmen@uvu.edu

Course Description: For Biology majors. Studies genetic basis of life and the mechanisms by which the information to propagate life is stored in DNA. Presents classical, molecular and population genetics in the background of current techniques and understanding of genetic processes. Successful completion of this course should provide an understanding of the basic principles of genetics and preparation for more advanced courses in other aspects of biology.

Course Materials will be posted to UVU CANVAS

Required Text: Pierce, Genetics, a Conceptual Approach. – eBook is provided though course registration fee, and is fully integrated into Canvas

Prerequisite: BIOL 1610

Course Objectives: Successful completion of this course should enable you to:

1. Apply the processes of mitosis and meiosis and to explain and predict the transmission of genetic information.
2. Use basic patterns of genetic inheritance to predict the transmission of genetic attributes to future generations.
3. Describe the structure of DNA and explain how its structure facilitates information storage, replication and transfer.
4. Explain how genes control the activities of the cell and the physical and behavioral attributes of organisms
5. Describe how genes and the environment interact with each other to generate the physical and behavioral attributes of organisms.
6. Describe and explain processes that generate genetic variation.
7. Explain how genes are transmitted through populations, and how differential transmission of alleles leads to evolution.
8. Explain how changes in chromosome number and structure occur, and the genetic and evolutionary consequences of such changes.

Format of class:

This class is hybrid and at a rapid pace. Usually, Genetics is taught over a full semester, whereas this section is over a shorted 7 ½ week Summer Block course.

- **Lectures**: Pre-recorded and uploaded by the beginning of the week. See attached calendar for recommended watch dates. You are welcome to watch them as many times as you need!
- **Homework**: Through online textbook company.
- **Group Work**: In-class portion. These assignments are applications of the concepts from lecture and formatted very similar to exam questions. Working in groups often leads to better understanding of

the material. As this is group work, it can be handed in as a group, but it can be completed independently. I am not requiring attendance in these sessions, although it is recommended for success. All students are required to turn-in these assignments for a grade.

- **Exams**: Three total exams. 2 are "midterms", which cover material leading up to exam. The final exam is cumulative. All exams are online through the Canvas system. Review sessions are held in the in-class day preceding the exam

Grading Standards: The table below indicates the percentage required for each grade.

A = 93% & above	A- = 90-92.95	B+ = 87-89.95
B = 83-86.95	B- = 80-82.95	C+ = 77-79.95
C = 73-76.95	C- = 70-72.95	D+ = 67-69.95
D = 63-66.95	D- = 60-62.95	E (failing) = Below 60

How grades will be calculated:

1. **In-class Group Work** These are typically completed Tuesdays and Thursdays during class time and should be uploaded to the appropriate Assignment in Canvas by someone in your group the corresponding day (Tuesday or Thursday) at 11:59 pm.; 25%
2. **Post-class Homework Problems** These will be completed on the textbook publisher's webpage through links integrated into Canvas, due by its corresponding date at 11:59 pm (see calendar) Most homework will be due Sundays or Wednesdays by 11:59pm; 25% A 20% per day late penalty will be assessed on each question submitted after the due date.
3. **Midterm Exams** These will be administered as quizzes in Canvas, and will open at 12:00 am Friday and close at 11:59 pm Sunday on the specified week; 25%)
4. **Final Exam** Will be administered as a quiz in Canvas, and will open at 12:00 am on Thursday, June 22 and close at 5:00pm on Friday, June 23; 25%

Resources:
This course will utilize Canvas for communication, assignment completions, and content delivery. Students are encouraged to utilize the resources available at the Office of Teaching and Learning webpage to acquaint themselves with how Canvas works.

Suggestions for Successful Completion of this Course:
(A) Practice, Practice, Practice: Genetics can be hard, or it can be easy. If you work the assigned problems, it will probably be easy and fun. If you don't, you may have a hard time.
(B) Come to every class meeting and be on time.
(C) Take notes as you read the text and during lectures to summarize the main points. Review your notes after you complete your readings and after lectures (as soon as possible – at least within 24 hours).
(D) Take an active role in the learning process: Participate! As questions come up, post them to that week's Discussion board so that everyone can benefit from the learning process; I will do my best to answer them within 24 hours. If you know the answer to other students' posts, you are welcome to contribute, too!
(E) Complete all Assignments and Exams on time.

UVU Policy:
If you just stop attending class before the drop date without dropping, a grade of "UW" (which counts as a failing grade on your grade point average) is assigned only if you have a passing grade at that time. Otherwise, an E will be assigned regardless the date you stop attending. "I" and "UW" are NOT used to avoid a low grade.

Tentative Schedule: Changes announced in class and posted on CANVAS will take precedence.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1				*May 10*	*May 11*	*May 12*	*May 13*
Lectures to watch/In-class activity (T-R)				Genetics Intro **&** DNA Structure and Replication		RNA, Transcription, Translation	
Assignment Due:							
Week 2	*May 14*	*May 15*	*May 16*	*May 17*	*May 18*	*May 19*	*May 20*
Lectures to watch/In-class activity (T-R)			**Group Work**	Principles of Heredity	**Group Work**	Pedigrees	
Assignment Due:	Chapter 10 & Chapter 12 Homework due 11:59pm		Molecular Group work due 11:59pm	Chapter 13 & Chapter 15 Homework due 11:59pm	Inheritance Group work due 11:59pm		
Week 3	*May 21*	*May 22*	*May 23*	*May 24*	*May 25*	*May 26*	*May 27*
Lectures to watch/In-class activity (T-R)			**Group Work**		**In class Review for Exam 1**	Extensions and Modifications of Basic Principles	
Assignment Due:	Chapter 3 homework due by 11:59pm		Pedigrees group work due 11:59pm	Chapter 6 homework due by 11:59pm		Exam 1	Exam 1
Week 4	*May 28*	*May 29*	*May 30*	*May 31*	*June 1*	*June 2*	*June 3*
Lectures to watch/In-class activity (T-R)	Memorial Day Holiday		**Group Work**	Population Genetics	**Group Work**	Linkage, Gene Mapping	
Assignment Due:	Exam 1 Due	Memorial Day Holiday	Extensions of basic principles group work due 11:59pm	Chapter 4 & Chapter 5 Homework due by 11:59pm	Pop. Genetics group work due 11:59pm		

Week 5	*June 4*	*June 5*	*June 6*	*June 7*	*June 8*	*June 9*	*June 10*
Lectures to watch/In-class activity (T-R)			**Group Work**	Chromosome Variation	**Group Work**	Genome Organization	Regulation of Prokaryotic Gene Expression
Assignment Due:	Chapter 25 homework due by 11:59pm		Linkage Group work due 11:59pm	Chapter 7 Homework by 11:59pm	Chromosome Variation group work due 11:59pm		
Week 6	*June 11*	*June 12*	*June 13*	*June 14*	*June 15*	*June 16*	*Jun 17*
Lectures to watch/In-class activity (T-R)			**Group Work**		**In class Review for Exam 2**	Regulation of Eukaryotic Gene Expression	
Assignment Due:	Chapter 8 homework by 11:59pm		Prokaryotic Expression Group work due 11:59pm	Chapter 16 homework by 11:59pm		Exam 2	Exam 2
Week 7	*June 18*	*June 19*	*June 20*	*June 21*	*June 22*	*June 23*	
Lectures to watch/In-class activity (T-R)		Cancer Genetics	**In class review for Final**				
Assignment Due:	Exam 2 Due		Chapter 17 & Chapter 21 homework by 11:59pm		Final Exam	Final Exam by 4pm	

Academic Integrity:
Each student is expected to maintain academic integrity and honesty in all forms. I believe that the main benefit of a college education comes from learning how to learn, how to integrate concepts, how to extrapolate from available information: i.e. from developing your capacity for critical thought. It is the learning process that develops these skills. Any attempt to bypass the learning process would defeat the purpose and deny you the benefits of your education. I expect all students to do their own work and accept the grades they earn from their own efforts.

I will apply ZERO TOLERANCE for lapses of academic integrity. Any student found to be guilty of lying, falsifying, cheating, plagiarism or any other form of academic dishonesty will be given a failing grade.

Late work:
Late work will be accepted only under extenuating circumstances. If you have an unavoidable conflict, discuss this with me BEFORE the date of the assignment has passed in order to make suitable accommodations.

Attention Students with Disabilities:
"Students who need accommodations because of a disability may contact the UVU Accessibility Services Department (ASD), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the ASD office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677."

Biology Department Policy:
"Students in this class are expected to understand and use proper English grammar, sentence structure, and spelling. Use of dictionaries during quizzes and exams is NOT allowed. Students are also expected to have basic calculating skills that include fractions, decimals, exponents (e.g., squares & square roots, powers of ten) and the ability to solve simple algebraic expressions. In addition, they must be able to add, subtract, multiply, and divide small numbers without a calculator." Understanding of logarithms (logs) will be helpful. "Course rigor level should be such that the average grade is about a C."

Classroom Behavior:
"... a student enrolled in the College accepts the obligation to conduct him/herself in an adult manner acceptable at an institution of higher education. …. Faculty members have the right to set classroom standards of behavior and attendance."

Student Evaluations:
UVU faculty are committed to improving their methods of instruction. Student input is not only welcome, but vital to this process. Please participate in the on-line version of the Student Rating of Instructor (SRI). Your feedback is important. As in the past, your instructor will not see the results until after grades have been submitted.