BIOL 3500 Genetics Spring 2022

3500-003 T,R 2:30-3:45 in SB 263.
INSTRUCTOR: Dr. Carl Hjelmen Office: SB 242b

Contact Information
Student Hours: Tuesday 4:00pm-5:00pm, Wednesday 10:00am-11:30am, and Friday 10:00am-11:30am, 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.

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

Lesson/Week	Dates	Topic
1	Jan. 11 Jan. 13	Introduction, DNA as the Molecule of Heredity *Chapters 1, 10, 12*
2	Jan. 18 Jan. 20	Transcription, RNA processing, and Translation *Chapters 13, 15*
3	Jan. 25 Jan. 27	Principles of Heredity *Chapters 2, 3*

4	Feb. 1 Feb. 3	Pedigrees and Genetic Testing *Chapter 6*
5	Feb 8. Feb. 10	Extensions and Modifications of Basic Principles *Chapters 4,5* Midterm 1: Weeks 1-4: Feb. 10-13
6	Feb. 15 Feb. 17	Population Genetics *Chapter 25*
7	Feb. 22 Feb. 24	Linkage, Recombination, Gene Mapping *Chapter 7*
8	Mar. 1 Mar. 3	Chromosome Variation *Chapter 8*
Spring Break	March 7- March 11	NO CLASS
9	Mar. 15 Mar. 17	Genome Organization and Evolution
10	Mar. 22 Mar. 24	Mutation *Chapter 18* Midterm 2: Weeks 5-9: Mar. 24-27
11	Mar. 29 Mar. 31	Control of Gene Expression in Bacteria *Chapter 16*
12	Apr. 5 Apr. 7	Control of Gene Expression in Eukaryotes, Epigenetics *Chapters 17, 21*
13	Apr. 12 Apr. 14	Cancer Genetics *Chapter 23*
14	Apr. 19 Apr. 21	Genomics and Molecular Genetic Analysis *Chapters 19 and 20* Midterm 3: Weeks 10-13: Apr. 21-24
15	Apr. 26	Review for Final Exam
16		Final Exam: Cumulative: May. 2-3

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 on Thursdays, and should be uploaded to the appropriate Assignment in Canvas by someone in your group by Thursday at 11:59 pm. In-class participation is required unless excused in advance; 20%
2. **Post-class Homework Problems** These will be completed on the textbook publisher's webpage through links integrated into Canvas, due Sunday at 11:59 pm; 20% 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 Thursday and close at 11:59 pm Sunday on the specified week; 35%)
4. **Final Exam** Will be administered as a quiz in Canvas, and will open at 12:00 am on Monday, May 2 and close at 11:59 pm on Tuesday, May 3; 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.

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.

Re-grades:
If you feel that a particular assignment was graded incorrectly, you should bring the potential mistake to my attention within 1 week after the grade has been posted in Canvas. After that time, I will not revise the assignment grade.

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.