

## BIOL 3900: Genetics

### Contact Information:

**Instructor:** Dr. Jessica Carter

**Email Address:** jcarter80@gsu.edu

**Office Location:** NSC 322

**Office Hours:** Available by appointment

### Course Information:

**Days:** Monday - Friday

**Time:** 9:00am-11:20am

**Location:**

**Required Material:** Achieve access for: Genetics A Conceptual Approach 7e  
(Used books **DO NOT** include Achieve access).

### Learning Objectives:

By the end of this course, students should be able to:

- Distinguish between the main concepts of heredity
- Compare eukaryotic and prokaryotic cells, chromosome structures and cell division.
- Explain how the process of meiosis produces genetic variation during sexual reproduction.
- Use principles of heredity to predict progeny produced from various types of genetic crosses.
- Use the chi-square goodness of fit test to determine the probability that observed numbers of progeny differ from expected numbers.
- Outline the different mechanisms by which sex may be determined and how sex chromosomes influence the inheritance of traits.
- Work and interpret genetic crosses involving factors that affect inheritance outside of Mendelian principles.
- Understand the importance of and how to use them to analyze the genetic basis of traits in humans.
- Explain the inheritance of linked genes and understand how it influences recombination rates.
- Define the major types of chromosome mutations and rearrangements and their effects on chromosome structure.
- Outline the structures of DNA, RNA, and proteins and how they function in the dogma of biology.
- Explain how the processes involved in the dogma of replication differs between eukaryotes and prokaryotes.
- Describe the relationship between genes and proteins, why regulation of gene expression is important and the different levels at which gene regulation may occur.
- Describe the effects of evolutionary forces (mutation, migration, genetic drift, and natural selection) on allelic frequencies of a population.

## Course Policies:

### **Attendance**

Attendance and in-class participation will be determined by a clicker system. Regular attendance is highly encouraged. Clicker participation will constitute a large portion of your final grade. However, in order to get the full credit for participation, you only need to participate in 80% of the class clicker sessions.

### **Point Distribution:**

Your grade in this course will be based on a total of 600 points.

Assignment	Points
Quizzes (50 pts each)	200
Achieve Assignments	200
Attendance/Participation	100
Final Exam	100
<b>Total</b>	<b>600</b>

### **Final Letter Grades:**

Your final letter grade in class is determined by the points you accumulate throughout the semester through the completion of assignments submitted on time. No late submissions will be accepted, and there will be no reopening of an assignment. Letter grades will be assigned with the following scale. Total points are not rounded up. There are not any bonus points awarded in this class. A percentage grade will be calculated based on points earned out of a possible 600 points.

A+	>98%
A	90% – 97.9%
A-	88.0% – 89.9%
B+	86.0% – 87.9%
B	80.0% – 85.9%
B-	78.0% – 79.9%
C+	76.0% – 77.9%
C	70.0% – 75.9%
D	60.0% – 69.9%
F	<60.0%

Incomplete: To qualify for an incomplete, The reason for your inability to complete the course must be documented, and be after the midpoint of the semester (last day to drop). Additionally, your grade average must be a C or higher at the time of the request.

Academic Honesty: As members of the academic community, students are expected to recognize and uphold standards of intellectual and academic integrity. Both the ideals of scholarship and the need for fairness require that all dishonest work be rejected as a basis for academic credit. Consequences of academic dishonesty will be receiving a 0% on the assignment and will be reported to the Dean of Students. Please refer to the document titled “Statement on Academic Dishonesty” for information.

### Tentative Schedule: Summer 2023

Day	Topic	Assignments Due
<b>Day 1</b>		
July 7 <sup>th</sup>	Introduction to Genetics: Ch 1	
	Chromosomes and Cellular Reproduction: Ch 2	
<b>Week 1</b>		
July 10 <sup>th</sup>	Basic Principles of Heredity: Ch 3	Modules 1
July 11 <sup>th</sup>	Quiz #1	
July 12 <sup>th</sup>	Sex Determination and Linkage: Ch 4	
July 13 <sup>th</sup>	Incomplete & Codominance, Lethal Alleles: Ch 5	
July 14 <sup>th</sup>	Multiple Alleles, Gene & Environmental Interactions: Ch 5	Module 2
<b>Week 2</b>		
July 17 <sup>th</sup>	Quiz #2	
July 18 <sup>th</sup>	Pedigrees & Human Genetics: Ch 6	
	Chromosomal Variation: Ch 8	
July 19 <sup>th</sup>	Linkage & Recombination: Ch 7	Module 3
July 20 <sup>th</sup>	Quiz #3	
July 21 <sup>st</sup>	Molecular Genetics: Genomes: Ch 10	
	Molecular Genetics: DNA Structures: Ch 11	
<b>Week 3</b>		
July 24 <sup>th</sup>	Molecular Genetics: Recombination & Replication: Ch12	
	Molecular Genetics: Transcription: Ch 13	
July 25 <sup>th</sup>	Molecular Genetics: mRNA Processing: Ch 14	
	Molecular Genetics: Translation: Ch 15	Module 4
July 26 <sup>th</sup>	Quiz #4	
July 27 <sup>th</sup>	Population Genetics: Ch 25	Module 5
July 28 <sup>th</sup>	Final Exam	