

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Genetics Lecture

Course Abbreviation and Number: BIO 2561 **Credit Hours:** 3

Course Type: Lecture

Course Description: This course explores the fundamental principles of heredity, including Mendelian genetics, chromosome structure and replication, gene expression and regulation, mutations, and DNA repair. Students will also examine modern topics such as population genetics, molecular evolution, and recombinant DNA technology.

Prerequisite: ENG 1510 and BIO1571+1572; Prerequisite/Corequisite: CHE 1551+1552 or higher; Corequisite: BIO2562.

General Education Requirements Met:

SUNY
Natural Sciences

JCC
Scientific Reasoning

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Explain and apply key genetic principles—including Mendelian inheritance, gene expression, mutation, and DNA technology—to analyze patterns of heredity and solve problems in classical and molecular genetics.
2. Application of scientific data, concepts, and models in one of the natural sciences. [SUNY Gen Ed – Natural Sciences SLO 2]

Topics Covered:

- DNA, RNA and protein biochemistry
- Transcription and associated regulatory mechanisms
- Translation and associated regulatory mechanisms
- Replication, associated regulatory mechanism and mutagenesis
- Mitosis and meiosis
- Epigenetics and control of gene expression
- Basic Mendelian genetics- monohybrid and dihybrid crosses
- Sex determination and sex-linked traits
- Pedigree analysis
- Linkage recombination and mapping
- Chromosomal abnormalities and variations
- Molecular genetics
- Population genetics
- The structural differences between eukaryotic and prokaryotic genomes

Information for Students:

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)
- Accessibility Services: <https://www.sunyjjc.edu/accessibility>
- Get Help: <https://www.sunyjjc.edu/gethelp>
- Emergency closings: <https://www.sunyjjc.edu/jccalert>
- Course grades are determined by the instructor based on a combination of factors, including but not limited

to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

Letter Grade	A	B+	B	C+	C	D+	D	F
Numerical Grade	4.0	3.5	3	2.5	2	1.5	1	0

- Veterans and active-duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Term: Fall 2026