

**JAMESTOWN COMMUNITY COLLEGE**  
**State University of New York**

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**INSTITUTIONAL COURSE SYLLABUS**

**Course Title:** Principles of Cell and Molecular Biology

**Course Abbreviation and Number:** BIO 1570

**Credit Hours:** 4

**Course Type:** Lecture/Lab

**Course Description:** Students will identify, understand, and interpret fundamental biological principles such as the chemical foundations of life, cell structure and function, cellular metabolism, photosynthesis, cellular respiration, cellular reproduction, and classical, human and molecular genetics.

Prerequisite/Corequisite: ENG 1510 and CHE 1500 (or higher) - unless high school chemistry was passed;

Prerequisite/corequisite MAT 0550 or Eligibility MAT 1590 (or higher).

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**General Education Requirements Met**

**SUNY**

Natural Sciences

**JCC**

Scientific Reasoning

Applied Learning

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**Student Learning Outcomes:**

Students who demonstrate understanding can:

1. Demonstrate an understanding of the methods scientists use to explore natural phenomena, including observation, hypotheses development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling. [SUNY Gen Ed – Natural Sciences]
  2. Application of scientific data, concepts, and models in one of the natural sciences. [SUNY Gen Ed – Natural Sciences]
  3. Effectively apply knowledge and skills to a real-world experience, creative project, or independent intellectual investigation. [JCC Gen Ed – Applied Learning]
  4. Thoughtfully reflect on connections between concepts studies in the classroom and insights gained from an applied learning experience/project. [JCC Gen Ed – Applied Learning]
  5. Recognize the importance of ethical behavior in fostering a community of mutual respect and dignity.
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**Topics Covered:**

- Introduction – The Unity and Diversity of Life
  - Chemical Foundations of Life – Principles of Basic Chemistry
  - Chemical Foundations of Life – Biological/Organic Chemistry
  - Cellular Structure and Function
  - Membrane Structure and Function – Cellular Transport Mechanism
  - Foundations for Metabolism –Energy, Enzymes, and ATP
  - Energy-Releasing Pathways: Respiration and Fermentation
  - Energy-Acquiring Pathways: Photosynthesis
  - Cellular Division
  - Classical Patterns of Inheritance – Mendelian Genetics and Beyond
  - Human Genetics, Chromosomes, Sex-Linked Traits, and Sex Determination
  - Molecular Genetics
  - Conclusions
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**Information for Students**

- Expectations of Students
  - [Civility Statement](#)
  - [Student Responsibility Statement](#)
  - [Academic Integrity Statement](#)
- [Accessibility Services](#)  
Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- [Get Help: JCC & Community Resources](#)
- [Emergency Closing Procedures](#)

- Course grade is 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:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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- 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.

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**Effective Date:** Fall 2023