

# BIOL-120: GENERAL BIOLOGY

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## Effective Term

Fall 2026

## CC Approval

12/05/2025

## AS Approval

12/11/2025

## BOT Approval

12/18/2025

## COCI Approval

02/26/2026

## SECTION A - Course Data Elements

### CB04 Credit Status

Credit - Degree Applicable

### Discipline

Minimum Qualifications	And/Or
Biological Sciences (Master's Degree)	

### Subject Code

BIOL - Biology

### Course Number

120

### Department

Biology

### Division

Science and Engineering (SE)

### Full Course Title

General Biology

### Short Title

General Biology

### CB03 TOP Code

0401.00 - Biology, General

### CB08 Basic Skills Status

NBS - Not Basic Skills

### CB09 SAM Code

E - Non-Occupational

### Rationale

Update dating and DEI.

## SECTION B - Course Description

### Catalog Course Description

Study of the basic principles of biology on the molecular and cellular levels with emphasis on macromolecules of life, organelle structure and function, cellular metabolism, cellular reproduction, Mendelian and molecular genetics. Intended primarily for Biology Majors or students requiring a molecular/cellular interpretation of life.

## SECTION C - Conditions on Enrollment

### Open Entry/Open Exit

No

### Repeatability

Not Repeatable

### Grading Options

Letter Grade or Pass/No Pass

### Allow Audit

Yes

## Requisites

### Prerequisite(s)

Completion of CHEM-120 with a minimum grade of C.

## Requisite Justification

### Requisite Description

Course in a Sequence

### Subject

Chem

### Course #

120

### Level of Scrutiny

Content Review

### Upon entering this course, students should be able to:

1. Describe elements and classes of compounds formed in relation to the location of their constituent elements in the periodic table. Be familiar with concepts of bonding, various classes of chemical bonds and valence. Be familiar with energy concepts in chemical reactions, including factors which determine reaction rates and reaction equilibria.
2. Understand the scientific method in the development of experiments; the relationships between hypothesis and theory; data collection, analysis, and graphs.
3. Use appropriate mathematical manipulation to analyze atomic and molecular mass, the concept of a mole, concentrations of solutions (both molarity and percentage of solutions), and pH scale; to analyze a problem prior to any mathematical manipulation and develop a plan for analysis.
4. Demonstrate safe laboratory behavior in terms of manipulation of equipment and the use and disposal.

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## SECTION D - Course Standards

### Is this course variable unit?

No

### Units

4.00

### Lecture Hours

54

### Lab Hours

54

### Outside of Class Hours

108

**Total Contact Hours**

108

**Total Student Hours**

216

**Distance Education Approval****Is this course offered through Distance Education?**

Yes

**Online Delivery Methods**

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

**SECTION E - Course Content****Student Learning Outcomes**

Upon satisfactory completion of the course, students will be able to:	
1.	Communicate scientific information effectively through written or oral means.
2.	Demonstrate a proficiency of knowledge in molecular biology and genetics.

**Course Objectives**

Upon satisfactory completion of the course, students will be able to:	
1.	Identify and give examples of the characteristics common to all living organisms; evaluate and analyze which characteristics viruses and prions share with living organisms.
2.	Discuss levels of organization in living and non-living systems.
3.	Describe the basic cell structures and their functions in eukaryotic plant and animal cells; compare and contrast these with prokaryotic cells.
4.	Understand and describe principles of chemical bonds and reactions as they relate to the major classes of biological molecules.
5.	Review metabolic processes including cellular respiration, fermentation and photosynthesis.
6.	Describe mechanisms of cell membrane permeability and transport, and critically evaluate by theory and experimental analysis which molecules can freely pass through the membrane.
7.	Demonstrate skill in use of compound microscopes with prepared and wet mount slides of cells and organisms.
8.	Analyze the results of data collected from laboratory experiments performed by the class and relate these results to appropriate scientific theories and hypotheses developed at the start of the experiment. Be able to clearly write hypotheses, results, and conclusions of the experiments.
9.	Recognize under the microscope and describe the stages of mitosis in plant and animal cells. Compare and contrast mitosis with meiosis.
10.	Understand the unifying principles of classical and modern genetics and apply these principles in predicting the outcome of genetic crosses.
11.	Describe the process of protein synthesis including gene expression and regulation.
12.	Relate evolutionary processes to the origin and evolution of cells.
13.	Describe the mechanisms of DNA replication and cell division in prokaryotic and eukaryotic organisms.
14.	Critically evaluate and write a review of current scientific literature.

**Course Content**

Lecture content includes:

1. Characteristics of life
2. Scientific method
3. Levels of organization
4. Biological chemistry

- a. Principles of chemical bonds and reactions
- b. Properties and the importance of water
- c. Structure and functions of biological molecules (Proteins, lipids, carbohydrates, nucleic acids)
- 5. Membrane structure and function
- 6. Cellular transport
- 7. Structure and functions of prokaryotic and eukaryotic cells
- 8. Cellular organelles structure and functions
- 9. Cell communication
- 10. Energy and metabolism
  - a. Enzymes
  - b. Cellular respiration
  - c. Fermentation
  - d. Photosynthesis
- 11. Cell Cycle
  - a. DNA replication
  - b. Cell division and its regulation
  - c. Protein Synthesis
  - d. Gene structure, expression and regulation
- 12. Genetics
  - a. Mendelian genetics
  - b. Molecular genetics
  - c. Genetic disorders
  - d. Genes and development
- 13. Viruses
- 14. Bacteria
- 15. Protists
- 16. Biotechnology
- 17. Theories on the origin of life including endosymbiosis
- 18. Overview of evolution

Laboratory content includes:

- 1. Proper use of the microscope
- 2. Performing metric conversions and dilutions
- 3. Measuring volumes and weights
- 4. Detecting biological molecules in food items
- 5. Observing cells and membrane sacs in varying osmotic conditions
- 6. Staining plant and animal cells to observe organelles
- 7. Identifying tissue types using histological slides
- 8. Performing quantitative analysis using a spectrophotometer
- 9. Identifying live and prepared protists
- 10. Observing cells undergoing mitosis
- 11. Determining the elements required for photosynthesis to occur
- 12. Culturing and observing bacterial cells
- 13. Presenting oral reports
- 14. Writing written scientific lab reports
- 15. Exploring the topic of evolution and natural selection
- 16. Discussing current scientific literature

## Methods of Instruction

### Methods of Instruction

Types	Examples of learning activities
Discussion	
Experiments	
Lab	
Lecture	

**Online Adaptation**

Types	Examples of learning activities
Activity	
Directed Study	
Group Work	
Individualized Instruction	
Journal	
Lecture	

**Instructor-Initiated Online Contact Types**

Announcements/Bulletin Boards  
 Chat Rooms  
 Discussion Boards  
 E-mail Communication  
 Telephone Conversations  
 Video or Teleconferencing

**Student-Initiated Online Contact Types**

Chat Rooms  
 Discussions  
 Group Work

**Course design is accessible**

Yes

**Methods of Evaluation****Methods of Evaluation**

Types	Examples of classroom assessments
Exams/Tests	
Essays/Papers	
Oral Presentations	
Homework	
Lab Activities	

**Assignments****Reading Assignments**

Reading assignments from the textbook, laboratory manual and relevant research articles.  
 Example 1: Read chapter 5 of the textbook as preparation for the lecture on the cell membrane  
 Example 2: Read the scientific review article on cell signaling

**Writing Assignments**

Mathematical calculations and statistical analysis of lab data. Laboratory reports  
 Example 1: Write a laboratory report on the photosynthesis experiment, including an abstract, introduction, methods, results, discussion and conclusion sections.  
 Example 2: Solve chemistry problems including metric conversions.

**SECTION F - Textbooks and Instructional Materials****Material Type**

Textbook

**Author**

Urry, L. A. et. al

**Title**

Campbell Biology

**Edition/Version**

11th

**Publisher**

Pearson

**Year**

2017

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**Material Type**

Textbook

**Author**

Raven, P. et al.

**Title**

Biology

**Edition/Version**

10th

**Publisher**

McGraw Hill

**Year**

2014

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**Material Type**

Manual

**Author**

NVC Biology Department

**Title**

BIOL-120 Lab Manual

**Publisher**

Napa Valley College

**Year**

2019

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**SECTION G - Diversity, Equity and Inclusivity**

**How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?**

This course supports diverse student populations through the use of multiple representations of concepts, varied applications, and technology. Strategies may also include collaborative learning, transparent assessment practices, low-cost resources, and opportunities for students to connect course material to their own experiences, fostering equitable outcomes and an inclusive classroom environment.

**Course Codes (Admin Only)**

**CB00 State ID**

CCC000253032

**CB10 Cooperative Work Experience Status**

N - Is Not Part of a Cooperative Work Experience Education Program

**CB11 Course Classification Status**

Y - Credit Course

**CB13 Special Class Status**

N - The Course is Not an Approved Special Class

**CB23 Funding Agency Category**

Y - Not Applicable (Funding Not Used)

**CB24 Program Course Status**

Program Applicable

**Allow Pass/No Pass**

Yes

**Only Pass/No Pass**

No