

Community College of Philadelphia

Department of Biology

General Biology 1 Biology 106 Hybrid

Course Syllabus, Objectives and Laboratory Schedule

Main Campus: Department of Biology Office
Room W1-1

Department Head: Dr. Linda Powell

Spring and Fall Semester Hours: 9-5, M-F

Summer A and N Semester Hours: 9-5, M-R

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Departmental Website: <http://faculty.ccp.edu/dept/biol/>

Name _____

Class Section: _____

Instructor's Name _____

Office Number _____ Office Phone _____

Office Hours _____ Email _____

CATALOG DESCRIPTION

Biology 106 Hybrid (1-2-4) General Biology I Introduction to the general principles of biology using the human as the model for study. Topics include structural organization, metabolism and energy, reproduction and inheritance, evolution and ecology. This course is designed for non-biology majors and allied health students.

LEARNING OUTCOMES

Biology 106 Provides students with a firm knowledge of biology, and prepares students to explore and critically evaluate the social and ethical implications of biological research. Upon completion of biology 106, students will have learned concepts that are included in the following content areas:

1. Thought processes of scientists
2. Characteristics of living organisms
3. Reproduction and inheritance
4. Biodiversity – structural organization of living systems
5. Natural selection and Ecology

The list of objectives included with each student learning outcome, describes the minimum subject material that the student is expected to master. Individual instructors may choose to elaborate on selected topics. They determine grading and evaluation policies as well. Your instructor is required to provide you with a written copy of her/his policy.

RESOURCE MATERIALS

Textbook

Biology: Concepts & Investigations 4th Edition. Hoefnagels, Marielle. McGraw-Hill Publishing
A copy of the textbook is on reserve in the CCP Library

Lab Manual

Laboratory Manual for General Biology I (Biology 106), Customized 3rd Edition, McGraw-Hill Publisher

ISBN	Package
9781260684506	Loose leaf text, Connect Access Code & Biol 106 Lab Manual
9781260715804	Softcover bound text w/ Connect access code & Biol 106 Lab Manual
9781260683752	Loose leaf text & Connect Access code
9781260713176	Softcover bound text w/ Connect access code

ACADEMIC SUPPORT SERVICES

Learning Lab Hours and Locations

Main Campus

Central Learning Lab, Bonnell Building, Room B1-28

(English, English as a Second Language, French, Spanish, Social Sciences, Art History)

Monday-Thursday: 9 a.m. to 8 p.m.

Closed Friday, Saturday, and Sunday

Call 215-751-8480 for more information.

Science, Technology, & Allied Health Lab – Library, Lower Level – L1-LL

(Biology, Chemistry, Diagnostic Medical Imaging, Nursing, Nutrition)

Monday-Thursday: 9 a.m. to 4:15 p.m.*

Closed Friday, Saturday, and Sunday

Call 215-751-8482 for more information.

Math and Business Learning Lab, Bonnell Building, Room B2-36

(Mathematics, Accounting, Finance, Economics, Marketing)

Monday-Thursday: 9 a.m. to 4:15 p.m.

Closed Friday, Saturday, and Sunday

Call 215-751-8481 for more information.

*After 4:15 p.m., Math and Science tutors are available in the Central Lab Monday-Thursday from 4:30 to 8 p.m.

Regional Centers

Northeast Regional Center, Learning Commons

Monday-Thursday: 8:30 a.m. to 8 p.m.

Closed Friday, Saturday, and Sunday

Call 215-972-6236 for more information.

Northwest Regional Center, Room 121

Monday-Thursday: 10 a.m. to 6:30 p.m.

Closed Friday, Saturday, and Sunday

Call 215-496-6020 for more information.

West Regional Center, Learning Commons

Monday-Thursday: 8:30 a.m. to 4:30 p.m.

Closed Friday, Saturday, and Sunday

Call 267-299-5848 for more information.

Starfish Connect is a communication tool for students and faculty. Through Starfish instructors can provide feedback to you about course progress. Throughout the term, you may receive progress emails regarding your academic performance. The emails are designed to be helpful and increase your success in courses. Be sure to open any emails you receive and follow the recommendations. Instructors may also recommend that you contact a specific campus resource, such as the Learning Lab or Counseling Center. If an instructor makes a referral, you may also be contacted directly by this campus service as a follow-up. To access Starfish Connect, simply log into Canvas and click on the link, Starfish Connect. You can even set up a student profile. If you need assistance with Starfish Connect, you can email questions to starfishconnect@ccp.edu.

ATTENDANCE AND WITHDRAWAL POLICY

Students are expected to fulfill their academic obligation by attending all class and lab sessions, unless prevented from doing so by illness or other emergency. College policy stipulates that an instructor may file an administrative withdraw to remove a student from class if s/he has missed the equivalent of two (2) weeks work without an acceptable excuse. It is incumbent upon the student to drop a course they no longer attend. Individual faculty members also have the right to establish attendance regulations, which may include reduced grades for students who miss class and/or lab. Your instructor must provide their attendance policy in writing at the beginning of the semester.

A student may withdraw from class without penalty up to the eleventh week of the semester. It is advised that a student first discuss with their teacher any plans regarding withdraw. Failure to attend classes does not constitute a withdrawal and will result in the assignment of a failing grade. Students who withdraw due to illness or some other emergency should petition the Vice President of Student Affairs for an Excused Withdraw.

BIOLOGY DEPARTMENT POLICY ON ACADEMIC DISHONESTY

Cheating/Plagiarism - All students are expected to understand what constitutes cheating and plagiarism. The College's **Cheating and Plagiarism Resolution** is contained in the *Student Handbook*, which is available through the Student Life Center located in Room S1-19.

Academic Dishonesty

A. Cheating behaviors include, but are not limited to:

1. examining or copying another student's answers during a test, exam, or practical
2. examining or copying another student's paper or lab report

3. bringing notes, etc. to class and/or lab during testing (on a scrap of paper, cuffs, etc.)
4. using a dictionary or other source during testing
5. asking someone for the answers to test questions
6. having another person take the test for you
7. stealing or having in your possession without permission, any materials, belonging to or generating from faculty, staff or students

B. Aiding another in committing an act of academic dishonesty includes, but is not limited to:

1. Willfully offering answers or information related to tests and examinations
2. Doing another student's assignment (in or outside of the classroom and/or laboratory)
3. Taking a test for another student
4. Failing to report knowledge of another student cheating

C. Plagiarism includes, but is not limited to:

1. Copying from any source without quotation marks and appropriate documentation
2. Rewording an idea from a source but omitting documentation
3. Having another write for you or copying another student's work
4. Having another correct mistakes on your paper (suggested revisions are acceptable)

Faculty Rights: Sanctions available to faculty include, but are not limited to:

1. Requiring the student retake test or rewrite report
2. Drop the item in the calculation of the final grade or provide a substitute item in grading
3. Give the student a zero on the item
4. Drop the student's final grade by one letter
5. Administratively withdraw the student from the course (if before the eleventh week)
6. Give the student a failing grade in the course

Student's rights: Student may appeal decisions regarding final grades as per College policy. A copy of student's rights and obligations are available in the *Student Handbook*.

STUDENT CODE OF CONDUCT

Every student is expected to be fully acquainted with and comply with all policies, rules, and regulations outlined in the **Student Code of Conduct**. The Student Code of Conduct is contained in the *Student Handbook*, which is published and updated each year. Copies of the *Student Handbook* are available through the Student Life Center located in Room S1-19.

DEPARTMENT OF BIOLOGY FINAL EXAMINATION POLICY

Your instructor is required to administer a comprehensive final examination during the final week of the semester. The entirety of this course and the final examination have been developed by the faculty who serve on the Biology 106 Course Development Committee. The final examination questions reflect the Student Learning Outcomes and course content as outlined in this Syllabus.

The grade on the final examination must count for at least 15% of your final grade.

BIOLOGY 106 STUDENT LEARNING OUTCOMES AND OBJECTIVES

1. Describe the steps of the scientific method.

Objectives:

- Explain how observations lead to a hypothesis.
- Identify and explain the differences among independent, dependent and controlled variables.
- Explain how data is gathered and interpreted.

2. Describe the concepts of Atomic Theory including how it relates to the formation of simple and macromolecules.

Objectives:

- Identify the locations and functions for protons, neutrons, and electrons.
- Explain the formation of covalent (polar and non-polar), ionic and hydrogen bonds.
- Describe the characteristics of water that make it suitable to support life.

3. Explain the different types of organic molecules and their functions in a cell.

Objectives:

- Explain the difference between organic and inorganic molecules.
- Identify and describe the major functions these four organic molecules (lipids, proteins, carbohydrates, nucleic acids) found in living things.

4. Describe the components and structures found in cells.

Objectives:

- Differentiate between prokaryotic and eukaryotic cells.
- Describe the subcellular structures found in cells including but not limited to the following: endoplasmic reticulum, golgi apparatus, nucleus, lysosomes, peroxisomes, ribosomes, centrioles, mitochondria, chloroplasts, and cytoskeleton.
- Explain the functions of the subcellular structures in cells.

- Compare and contrast passive vs active transport mechanisms utilized by cells.

5. Explain the processes involved in cellular energy and metabolism.

Objectives:

- Explain how energy transformations apply to living systems.
- Describe the major stages of photosynthesis.
- Describe the major stages of aerobic respiration.
- Compare and contrast aerobic respiration and fermentation.
- Explain the connection between the products and reactants of photosynthesis and cellular respiration.
- Explain the role enzymes play in cells.

6. Explain the life cycle of cells.

Objectives:

- Explain the cell cycle.
- Explain the steps in mitosis.
- Explain the steps in meiosis.
- Describe the role of cytokinesis in cell division.
- Differentiate between mitosis and meiosis.

7. Explain the connection between DNA (genotype) and protein synthesis (phenotype).

Objectives:

- Describe the structure and explain the functions of DNA and RNA.
- Describe the steps of transcription and translation.
- Discuss the role of DNA as the hereditary material of living things.
- Describe point and frameshift mutations.
- Describe the impact of mutations as they relate to natural selection and evolution.

8. Explain Mendel's Theory of Inheritance and its relationship to evolution

Objectives:

- Explain the inheritance of traits with respect to dominant/recessive; incomplete dominance; sex linked traits; codominance.
- Differentiate between natural and artificial selection.
- Describe the role of natural selection in evolution and speciation.
- Describe the effect of genetic engineering on organisms.

9. Explain the taxonomic organization of living organisms.

Objectives:

- Differentiate the three Domains of life
- Describe the three different cell types found in the three Domains of life
- Differentiate the characteristics of the four eukaryotic kingdoms (Protista, Animalia, Fungi, and Plantae).

- Describe the criteria for the classification of animals.

10. Describe the components of and explain the functions of an ecosystem.

Objectives:

- Describe the components of an ecosystem including but not limited to population, community, and nonliving factors.
- Describe the ecological roles played by members of an ecosystem (producers, consumers, predators, prey, and decomposers).
- Describe the relationships between members of an ecosystem.
- Describe the factors governing the size of a natural population.
- Explain the role of humans in the scheme of biodiversity of the planet.
- Explain the planetary cycles for water, carbon, and nitrogen.

BIOLOGY 106 LABORATORY OBJECTIVES

1. Describe the steps of the scientific method
2. Apply the scientific method to biological questions
3. Describe the characteristics of living organisms
4. Describe active and passive transport mechanisms
5. Explain the steps of photosynthesis
6. Explain allele frequencies and how they change over time within a population
7. Compare and contrast the characteristics of the three domains of life
8. Describe the characteristics delineating the four kingdoms in the eukaryotic domain
9. Differentiate between the major phyla of the animal kingdom
10. Describe the relationships between members of an ecosystem including predator/prey, producers and consumer
11. Demonstrate the ability to focus a microscope utilizing at least the 4x and 10x objectives
12. Demonstrate the ability to accurately utilize equipment for basic volume and mass measurement
13. Demonstrate the understanding of basic safety protocols for laboratories
14. Demonstrate the ability to follow basic laboratory protocols
15. Demonstrate an understanding of the measurement and interpretation of pH values

BIOLOGY 106 Hybrid LABORATORY SCHEDULE

Lab #	Topic
1	Orientation and Safety The Nature of Scientific Research
2	Acids, Bases, and Cells <i>Safety glasses and gloves required</i>
3	Solubility, Detection of Proteins and Carbohydrates <i>Safety glasses and gloves required</i>
4	Introduction to Cells and the Microscope <i>Safety glasses and gloves required</i>
5	Osmosis and Diffusion <i>Safety glasses and gloves required</i>
6	Photosynthesis <i>Safety glasses and gloves required</i>
7	Epidemiology and Hand Washing
8	Human Genetics
9	Classification of Animals
10	Natural Selection and Variation
11	Ecology and Predator-Prey Relationships
12	Biomes of the Earth

Students are expected to prepare for the laboratory by reading the laboratory activity in Community College of Philadelphia Customized Laboratory Manual for General Biology I (Biology 106) and textbook references, and completing the online pre-lab exercise.

During the laboratories specified above, students are required to wear approved eye protection and gloves. Any student who does not wear safety glasses and gloves will not be permitted in the lab room. Please note that students are required to sign a departmental agreement to follow the policies and procedures as outlined in the laboratory manual and provided to you, by your instructor, at the beginning of the semester.