



Basic Biology A: Full Course Summary

Note: If this course is intended to be a Credit Recovery course, the following assumptions apply:

- This course is a core course at the “Basic” level in Connections Academy’s system, which titles courses as Basic, Standard, Honors, or Advanced Placement (AP).
- The student has previously taken this or a similar course but did not achieve a passing grade based on his/her school’s grading scale.
- This course will be modified by the teacher in order to skip over areas in which the student shows understanding of the material, leaving more time to focus on gaps in the student’s knowledge or understanding.
- Because Credit Recovery courses will be shortened and/or modified based on individual student needs, these courses are generally **not** appropriate for students who have **not** previously taken this or a similar course, nor for students wishing to accelerate their high school studies.

If a student wishes to take this course for the first time he/she will be expected to cover all material in the course without the above-noted modifications. Students must discuss this option with the NaCA Admission and Support Representative prior to enrolling in the course for the first time.

Course Summary

This is the first of two courses that comprise Basic Biology. Throughout the semester, the student will be introduced to a variety of basic concepts in the field of biology. The Glencoe Science text *Biology: the Dynamics of Life* provides the basis for the course content.

This course consists of varied curriculum that provides the student the opportunity to compare different scientific methods and make real-world connections to science content. The student will investigate the nature of biology, explore biomes and ecosystems, identify parts of a cell, study the basics of genetics, and compare the six kingdoms of organisms.

Unit 1: What Is Biology?

Welcome to Basic Biology, the study of the diversity and unity of living organisms. In this opening unit, you will review the common characteristics of all organisms, examine various scientific methods, compare quantitative and qualitative information, and begin to examine how scientific discovery may affect society.

Lessons

1. What Is Biology?
2. The Methods of Biology
3. The Nature of Biology
4. Unit Review
5. Unit Test

Unit 2: Ecology: Part 1

All living and nonliving components on Earth—including plants, animals, water, air, and soil—have an effect on each other. *Ecology* is the study of how living and nonliving elements interact. In this unit, you will study these interactions as you identify *biotic* and *abiotic* factors that exist

in different ecosystems, study the characteristics of different biomes, and analyze how and why ecosystems change over time.

Lessons

1. Organisms and Their Environment
2. Nutrition and Energy Flow
3. Communities
4. Biomes
5. Unit Review
6. Unit Test

Unit 3: Ecology: Part 2

Previously, you learned that all living and nonliving things affect each other. As you continue your study of ecology you will explore the impact that humans have on the living and nonliving parts of ecosystems and the environment. You will also explore populations dynamics, and the importance and conservation of biodiversity.

Lessons

1. Population Dynamics
2. Human Population
3. How to Create a Science Lab Report
4. Lab: Animal Population
5. Vanishing Species
6. Conservation of Biodiversity
7. Unit Review
8. Unit Test

Unit 4: The Life of a Cell: Part 1

No matter how simple or complex, buildings are all composed of basic units of structural materials. Similarly, all organisms are made up of one or more cells, the basic units of life. In this unit you will explore the life of a cell as you study the chemistry of cells and identify cell structures and functions.

Lessons

1. Atoms and Their Interactions: Part 1
2. Atoms and Their Interactions: Part 2
3. Water and Diffusion
4. Life Substances
5. Lab: Enzyme Reaction
6. The Discovery of Cells
7. The Plasma Membrane
8. Eukaryotic Cell Structure
9. Unit Review

10. Unit Test

Unit 5: The Life of a Cell: Part 2

Even though cells are invisible to the naked eye, they are very complex. A single cell can grow, reproduce, and mutate. In this unit you will examine how cells transfer matter and energy, and analyze the cell cycle.

Lessons

1. Cellular Transport
2. Cell Growth and Reproduction
3. Control of the Cell Cycle
4. The Need for Energy
5. Photosynthesis: Trapping the Sun's Energy
6. Getting Energy to Make ATP
7. Unit Review
8. Unit Test

Unit 6: Genetics: Part 1

Most physical traits, such as eye and hair color, are passed down from one generation to the next. In this unit you will learn how genetics plays a role in determining traits as you study the history of genetics and analyze the structure and function of DNA.

Lessons

1. Mendel's Laws of Heredity
2. Meiosis
3. DNA: The Molecule of Heredity
4. From DNA to Protein
5. Genetic Changes
6. Lab: RNA Transcription
7. Unit Review
8. Unit Test

Unit 7: Genetics: Part 2

Previously, you studied the structure and function of DNA and the basic concepts of genetics. In this unit, you will learn more about genetics, genetic engineering, and the human genome project.

Lessons

1. Mendelian Inheritance of Human Traits
2. When Heredity Follows Different Rules
3. Complex Inheritance of Human Traits
4. Applied Genetics
5. Recombinant DNA Technology
6. The Human Genome
7. Lab: Modeling Recombinant DNA
8. Unit Review
9. Unit Test

Unit 8: Change Through Time

Just as Earth itself is dynamic, so is the life that exists upon it. In this unit you will explore how life on Earth has changed as you examine hypotheses about how life began, study the theory of evolution, analyze ancestral evidence of humans, and compare ways in which organisms are classified.

Lessons

1. The Record of Life
2. The Origin of Life
3. Lab: Determining a Rock's Age
4. Natural Selection and the Evidence for Evolution
5. Mechanisms of Evolution
6. Primate Adaptation and Evolution
7. Human Ancestry
8. Classification
9. The Six Kingdoms
10. Unit Review
11. Unit Test

Unit 9: Final Review and Exam

In this unit, you will have the opportunity to prepare for and take the final exam. The final exam may include any material that has been presented throughout the semester. Since this is a comprehensive exam, it may be helpful to organize your notes and answers to questions in your science journal before you begin to review.

Lessons

1. Biology A Final Review
2. Biology A Final Exam

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