

Course Description:

Biology B Honors focuses on examining the bigger picture of life. The course begins by exploring early Earth, the basics of biochemistry, the origin of cells, and the evolution of species. The course then moves into a presentation of how different organisms are grouped and identified. In this presentation, the major groups of organisms are identified and described, and you examine one organism group in more detail as you explore the human body systems. Finally, you learn about ecology and human interaction with the environment. Throughout the course, you explore the historical perspectives and modern social implications of the course topics.

Course Objectives:

- Apply scientific processes to conduct investigations.
- Use logical thinking to identify relationships and draw conclusions.
- Examine how investigations and research in biology are important to gaining historical perspective and understanding the societal value of scientific advances.
- Evaluate topics in biology to better understand the evolution of life, how organisms are classified, the similarities and differences between different groups of living organisms, how and why the human body systems work together, and the manner in which living organisms interact with each other and their environment.

Required Materials:

Unit 1

Lessons 2-5: Natural Selection Lab

- 10 small bowls
- 1 hole punch
- 10 different colored sheets of paper
- graph paper

Unit 2

Lesson 7: Dichotomous Key Lab*

- photos of leaves
- dichotomous key

*provided

Lessons 8-10: Investigating Fungi Lab

- mushrooms at a grocery store
- 1 Tbsp of brewer's or baker's yeast
- 1 bowl
- 1 C of water
- 3 tsp of sugar

Unit 3

Lessons 11-13: Plant Stem Lab

- 1 ruler
- 3 different plants*

*If you do not have easy access to plants, you may examine plants at a nursery, home improvement store, or friend's house.

Unit 4

Lessons 16-20: Human Body Systems

- slide presentation program

Course Overview:

Unit 1: Evolution

- Early Earth
- Biochemistry Basics
- The Origin of Cells
- The Theory of Evolution
- Natural Selection
- Evidence for Evolution
- Facts on Fossils
- Forming New Species
- Evolutionary Patterns
- Population Genetics
- A Look at Genetic Change
- Review: Biochemistry and Earth's History
- Review: Darwin and Evolution
- Review: Evolutionary Change

Unit 2: Classification and Microbiology

- Classifying Organisms
- Evolutionary Classification
- Kingdoms and Domains
- Enrichment: Evolutionary Classification
- Bacteria
- Viruses
- Protists
- Fungi
- Review: Classification
- Review: Bacteria and Viruses
- Review: Protists and Fungi

Unit 3: Plants and Animals

- Origins of Land Plants
- Types of Land Plants
- Plant Structure and Function
- Reproduction in Seed Plants
- Plant Response and Hormones
- Characteristics of Animals
- Invertebrates
- Chordates
- Aquatic Vertebrates
- Terrestrial Vertebrates
- Animal Behavior

- Review: Plants
- Review: Animals

Unit 4: The Human Body

- The Human Body
- The Nervous System
- The Integumentary System
- The Skeletal System
- The Muscular System
- The Cardiovascular System
- The Respiratory System
- The Lymphatic and Immune Systems
- The Digestive System
- The Excretory System
- The Endocrine System
- The Reproductive System
- Review: Human Body Systems: Part 1
- Review: Human Body Systems: Part 2

Unit 5: Ecology

- Introduction to Ecology
- Producers and Consumers
- Energy Flow
- Cycling Matter
- Climate
- Biomes
- Aquatic Ecosystems
- Population Growth
- Limits to Population Growth
- Review: Ecology, Matter, and Energy Flow
- Review: Biomes, Aquatic Ecosystems, and Populations

Unit 6: Ecology and Review

- Humans and the Environment
- Biodiversity: Threats and Solutions
- Ozone Layer and Climate Change
- Review: Ecology, Matter, and Energy Flow
- Review: Biomes, Aquatic Ecosystems, and Populations
- Review: Biochemistry and Earth's History
- Review: Darwin and Evolution
- Review: Classification
- Review: Bacteria and Viruses
- Review: Protists and Fungi
- Review: Plants - Review: Animals
- Review: Human Body Systems: Part 1
- Review: Human Body Systems: Part 2