Biology focuses on the mastery of basic biological concepts and models while building scientific inquiry skills and exploring the connections between living things and their environment.

The course begins with an introduction to the nature of science and biology, including the major themes of structure and function, matter and energy flow, systems, and the interconnectedness of life. Students then apply those themes to the structure and function of the cell, cellular metabolism, and biogeochemical cycles. Building on this foundation, students explore the connections and interactions between living things by studying genetics, ecosystems and natural selection, and evolution. The course ends with an applied look at human biology.

Scientific inquiry skills are embedded in the direct instruction, wherein students learn to ask scientific questions, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts.

Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science.

This course is built to state standards and informed by the Next Generation Science Standards (NGSS).

Length: Two Semesters

Unit 1: Introduction to Biology

- Biological Science
- Tools of Inquiry
- Introduction to Biology Wrap-Up

Unit 2: Energy and Matter in Living Systems

- The Building Blocks of Life
- Photosynthesis and Cellular Respiration
- Investigating Energy and Matter in Living Systems
- Energy and Matter in Living Systems Wrap-Up

Unit 3: Ecosystems

- Relationships in Ecosystems
- Ecosystem Stability and Change
- Ecosystems Wrap-Up

Unit 4: Multicellular Organisms

- Growth and Development
- Tissues, Organs, and Body Systems

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- Homeostasis
- Multicellular Organisms Wrap-Up

Unit 5: Semester 1 Review and Exam

Unit 6: Heredity

- Genetic Inheritance
- DNA Replication and Meiosis
- Patterns of Inheritance
- Heredity Wrap-Up

Unit 7: Genes and Traits

- Gene Expression
- Genetic Variation
- Genes and Traits Wrap-Up

Unit 8: Natural Selection

- Adaptations
- Natural Selection in Action
- Other Mechanisms of Population Change
- Natural Selection Wrap-Up

Unit 9: Evolution

- Changes to Earth's Species
- The Tree of Life
- Preventing Extinctions
- Evolution Wrap-Up

Unit 10: Semester 2 Review and Exam

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