The Living Earth integrates biology with Earth and space science. Throughout the course, students apply fundamental biological concepts to better understand how living systems and Earth's systems are interrelated and interdependent.

Course topics include structure and function of living organisms, heredity, genetic variation, natural selection, evolution, the biosphere, types of ecosystems and biomes, the ecology of populations and communities, the effects of change on the biosphere and its parts, the relationship of humans with the environment, and explorations of challenges humans face and sustainable solutions for the future health of Earth and its inhabitants.Students discover new concepts through guided instruction and confirm their understanding in an interactive, feedback-rich environment. 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.

A variety of activities encourage students to think scientifically. Lab and Project activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science and engineering. Virtual Lab activities enable students to engage in investigations that require long periods of observation at remote locations and to explore simulations that allow scientists to test predictions. In Discussions, students compare their lab or project results and exchange ideas about their investigations. Journal, Checkup, and Practice activities provide additional opportunities for students to practice their writing and scientific reasoning skills and apply learned concepts.

This course is built to Next Generation Science Standards. Throughout the course, students are evaluated via a variety of assessments designed to prepare them for the content, form, and depth of state exams.

Length: One Semester

Unit 1: Introduction to the Living Earth

- Core Ideas of Life Science
- Structure and Function: Cells to Organisms
- Maintaining Homeostasis
- Doing Science: Introduction to the Living Earth
- Introduction to the Living Earth: Wrap Up

Unit 2: DNA and Heredity

- DNA and Cell Reproduction
- Heredity
- Mendelian Genetics

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- DNA and Heredity Wrap-Up

Unit 3: DNA to Proteins

- Structure of Genetic Material
- From Nucleic Acids to Proteins
- Doing Science: DNA to Proteins
- Biotechnology
- DNA to Proteins Wrap-Up

Unit 4: Evolution

- Adaptation and Natural Selection
- Evolution of Species
- Doing Science: Evolution
- Diversity of Life
- Evolution Wrap-Up

Unit 5: Earth's Structure and Evolution

- The Geosphere
- The Atmosphere and Hydrosphere
- The Changing Biosphere
- Doing Science: Earth's Structure and Evolution
- Earth's Structure and Evolution Wrap-Up

Unit 6: Semester Wrap-Up

- Semester Review and Exam

Unit 7: The Biosphere

- Nature of the Biosphere
- Doing Science: The Biosphere
- Matter and Energy in the Biosphere
- Earth's Ecosystems and Biomes
- The Biosphere: Wrap Up

Unit 8: Ecology

- Populations
- Communities
- Doing Science: Ecology
- Changes in Ecosystems
- Ecology: Wrap Up

Unit 9: Humans and the Environment

- Human Ecology
- Natural Resources and Land Use
- Doing Science: Humans and the Environment
- Pollution and Its Effects
- Humans and the Environment: Wrap Up

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Unit 10: Sustainability for the Future

- Global Challenges
- Doing Science, Part I: Sustainability for the Future
- Sustainable Practices
- Doing Science, Part II: Sustainability for the Future
- Sustainability for the Future: Wrap-Up

Unit 11: Semester Wrap-Up

- Semester Review and Exam

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