

MS Science

The middle school science program allows students to investigate both the concepts and process skills of science. At each grade level, topics in earth science, biology, chemistry, and physics are interconnected to show students the relationships that exist between the sciences and the natural world. Inquiry and laboratory investigations are an integral part of the program. Problem solving and online investigations are used continually to allow students to investigate authentic problems and reinforce science concepts.

The middle school science program was developed through a National Science Foundation grant and reflects the Maryland and National Science Content Standards. High expectations and differentiated instruction allow all students a challenging and engaging access to science.

Grade 6 Living in the Natural World

Unit 1: Ecosystems and the Chesapeake Bay

By the end of this unit, students will be able to do the following:

- Investigate ecosystems, using the Chesapeake Bay as a model.
- Investigate populations and factors that influence them.
- Explore energy roles and how energy moves through an ecosystem.
- Participate in outdoor education.
- Earn student service learning credit.

Unit 2: Diversity and Adaptations of Organisms

By the end of this unit, students will be able to do the following:

- Explore similarities and differences among organisms.
- Explore diversity and adaptations of organisms.
- Explore relationships between organisms and their environment.
- Investigate how species change over time.

Unit 3: Forces and Motion

By the end of this unit, students will be able to do the following:

- Explore motion and the relationship between time, distance, velocity, and acceleration
- Explore the relationships between force and motion.
- Investigate Newton's Laws of Motion.
- Recognize and explain gravitational forces between objects

Unit 4: Energy

- Investigate the various forms of energy and the ways they can be transferred
- Explore conservation of energy
- Explain the many ways electrical energy can be produced and the effect on the environment
- Investigate the relationship between magnetic fields and electrical current

Dissection is one of the many instructional methods that may be used in middle school science. Students may re-quest one of the teacher's alternatives to dissection in these classes. Alternatives may include such materials as videotapes, charts, diagrams, and textbook overlays.

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Grade 7 Living in the Human World

Unit 1: Light and Sound

By the end of this unit, students will be able to do the following:

- Investigate the properties and behavior of waves.
- Relate wave properties and behavior to the eye and ear.
- Apply concepts of light and sound to the natural world.

Unit 2: Cells

- Identify the characteristics of plant and animal cells
- Explain specialization of cells in tissues, organs and systems
- Investigate the Cell Theory

Unit 3: Heredity

By the end of this unit, students will be able to do the following:

- Identify how species acquire traits.
- Explore variations among living things.
- Explore the continuity of traits from one generation to another.

Unit 4: Structure and Function of Living Organisms

By the end of this unit, students will be able to do the following:

- Examine the structure and function of organs within the human body
- Explain how organs and systems work together to carry out life functions

Unit 5: Interactions Within the Solar System

By the end of this unit, students will be able to do the following:

- Investigate the reasons for the seasons
- Investigate the predictable patterns of sun, moon and celestial bodies in the solar system
- Explore the components and scale of objects in the universe
- Explain observable astronomical phenomena as they affect earth, moon phases, tides, and eclipses.

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Grade 8 Living in a World of Change

Unit 1: Atmospheric Phenomena

By the end of this unit, students will be able to do the following:

- Explore some of the key components of Earth's weather patterns.
- Use weather instruments to collect data and predict future weather conditions.
- Investigate how global patterns within the atmosphere and hydrosphere affect the climate of our planet.
- Investigate how coastal communities prepare for severe weather conditions.

Unit 2: Introductory Chemistry

By the end of this unit, students will be able to do the following:

- Investigate how matter can be identified by observable measurable properties.
- Distinguish between physical and chemical changes.
- Determine that matter is neither created nor destroyed.
- Classify elements into groups based on properties.
- Distinguish between elements, compounds, and mixtures.

Unit 3: Earth's Structure

By the end of this unit, students will be able to do the following:

- Investigate the Earth's internal structure.
- Differentiate rock types and investigate the processes of the rock cycle.
- Explain how major geologic events are a result of crustal movement.
- Determine the difference between physical and chemical weathering.

Unit 4: Earth's History

By the end of this unit, students will be able to do the following:

- Investigate the formation of the universe, galaxies, stars, and planets (earth).
- Explore the evidence proving the earth's surface has changed over time
- Explore the role of sedimentary rock layers as evidence of changing life forms.
- Investigate that evolution is the process of change over time.

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