

Prioritized Curriculum Standards

Science

BIOLOGY	
Content/Measurement Topic	
Cell Theory	<ul style="list-style-type: none"> • CT1 - Compare the structure of the cell to its function (for example, the density of mitochondria found in cells of different tissues)
Homeostasis	<ul style="list-style-type: none"> • H1 - Explain feedback loops that maintain homeostasis in an organism
Origins of Life	<ul style="list-style-type: none"> • OL2 - Explain how taxonomy can be used to show similarity of structure and function while not necessarily implying common ancestry
Carbon Based Molecules	<ul style="list-style-type: none"> • CM1 - Explain how the structure of carbon-based molecules impacts their function • CM2 - Explain how carbon-based substances are classified and named
Cellular Respiration and Photosynthesis	<ul style="list-style-type: none"> • CRP1 - Explain photosynthesis as a chemical process • CRP2 - Explain cellular respiration as a chemical process
Organism Structure and Function	<ul style="list-style-type: none"> • OSF1 - Explain the role of cellular division (mitosis) in maintaining and producing complex organisms • OSF2 - Explain how cellular differentiation creates specialized cells from stem cells • OSF3 - Explain how specialized cells work together to create interacting systems that provide specific functions within a multicellular organism
Protein Synthesis	<ul style="list-style-type: none"> • PS1 - Explain how DNA controls the process of protein synthesis
Organism Traits	<ul style="list-style-type: none"> • OT1 - Explain the role of DNA in passing inheritable genetic traits from parents to offspring • OT2 - Explain the role of meiosis in passing inheritable genetic traits from parents to offspring • OT3 - Explain how inheritable genetic mutations are created
Genetic Variation	<ul style="list-style-type: none"> • GV1 - Explain the distribution and variation of expressed traits in a population
Natural Selection	<ul style="list-style-type: none"> • NS1 - Explain how advantageous traits increase an organism's chances of reproduction and survival • NS2 - Explain how natural selection leads to the adaptation of populations

Matter and Energy in Ecosystems

- **MEE1** - Explain the cycling of matter among organisms in an ecosystem
- **MEE2** - Explain the flow of energy among organisms in an ecosystem

Ecosystem Populations

- **EP1** - Explain why ecosystems tend to maintain relatively consistent numbers and types of organisms in stable conditions
- **EP2** - Explain how feedback loops maintain homeostasis in an ecosystem
- **EP3** - Explain how changes to an environment can result in a new ecosystem

Chemistry

Content/Measurement Topic

Atomic Structure

- **AS1** - Explain the atomic structure and electron configurations of specific elements
- **AS2** - Explain the organization of the periodic table

Molecular-Level Structures

- **MS1** - Relate the strength of electrical forces among particles to the molecular-level structure of substances at the bulk scale
- **MS2** - Explain how the molecular-level structure of substances affects their function

Chemical Reactions

- **CR1** - Explain how atoms' valence electrons inform the outcome of a simple chemical reaction
- **CR2** - Use the law of conservation of mass to explain why chemical reaction equations must be balanced
- **CR3** - Explain how the absorption or release of energy from a chemical reaction depends on changes in total bond energy

Chemical Reaction Factors

- **CRF1** - Explain factors that affect chemical reaction rate
- **CRF2** - Explain factors that affect the equilibrium of a chemical system

Changes in Energy

- **CE1** - Calculate the change in properties of system when energy is added or taken away.
- **CE2** - Calculate the change in energy of one component in a system when energy changes of the other component(s) and energy flows in and out of the system are known

Entropy	<ul style="list-style-type: none"> • EN1 - Explain why thermal energy uniformly distributes among components of a closed system when two components of different temperatures are combined
Fission, Fusion, and Radioactive Decay	<ul style="list-style-type: none"> • FFRD1 - Explain how changes in the composition of an atom's nucleus during radioactive decay release energy • FFRD2 - Explain how changes in the composition of an atom's nucleus during fission release energy • FFRD3 - Explain how changes in the composition of an atom's nucleus during fusion release energy
Carbon Based Molecules	<ul style="list-style-type: none"> • CM1 - Explain how the structure of carbon-based molecules impacts their function • CM2 - Explain how carbon-based substances are classified and named

Earth Science	
Content/Measurement Topic	
Earth Systems	<ul style="list-style-type: none"> • ES1 - Explain how changes to one of Earth's spheres can affect its other spheres • ES2 - Explain how human activity impacts Earth systems • ES3 - Explain how water's unique properties play a critical role in Earth systems • ES4 - Explain the cycling of carbon among the Earth's spheres
Earth Changes	<ul style="list-style-type: none"> • EC1 - Explain how matter is cycled by thermal convection within the Earth • EC2 - Relate the relative ages of crustal rocks to the theory of plate tectonics • EC3 - Explain how Earth's geologic processes form continental and ocean-floor features
Climate Change	<ul style="list-style-type: none"> • CC1 - Explain how the flow of energy within Earth's systems contributes to climate change • CC2 - Predict the future impact of global and regional climate change at current rates • CC3 - Explain how climate change has affected human activity
Earth Science, Environment Science, Astronomy	<ul style="list-style-type: none"> • NH1 - Explain how natural hazards impact human activity
Natural Resources	<ul style="list-style-type: none"> • NR1 - Explain how the availability of natural resources affects human activity • NR2 - Explain how cost-benefit ratios inform humans' use of natural resources
Earth's History	<ul style="list-style-type: none"> • EH1 - Explain theories regarding the formation of the Earth and Earth's early history

Celestial Objects

- **CO1** - Explain the stages of a star's life cycle
- **CO2** - Explain how nuclear fusion in a star's core releases radiation
- **CO3** - Explain how stars produce elements throughout their life cycle

Physical Science

Content/Measurement Topic

Motion

- **M1** - Use vector analysis to characterize change in position and motion
- **M2** - Use graphs to characterize change in position and motion
- **M3** - Use kinematics equations to characterize change in position and motion

Force

- **F1** - Use Newton's second law of motion to describe the mathematical relationships between net force, acceleration, and mass
- **F2** - Explain why the total momentum of a system of objects is conserved when there is no net force on the system
- **F3** - Explain how to minimize force on an object during a collision
- **F4** - Explain how unbalanced forces applied to a system can cause a change in its rotational motion

Energy Conversion

- **ECV1** - Explain how to convert energy from one form to another

Electromagnetic Radiation

- **ER1** - Explain differences between the particle model and the wave model for electromagnetic radiation
- **ER2** - Explain the effects of different frequencies of electromagnetic radiation on matter when absorbed

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Physics

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Gravity

- **G1** - Use Newton's law of gravitation to describe the gravitational forces between objects
- **G2** - Predict the motion of orbiting objects in the solar system

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Electromagnetism

- **EM1** - Identify similarities and differences between electrical and magnetic fields
- **EM2** - Draw conclusions about the ability of electric currents to produce magnetic fields
- **EM3** - Draw conclusions about the ability of magnetic fields to produce electric currents

Fission, Fusion, and Radioactive Decay

- **FFRD1** - Explain how changes in the composition of an atom's nucleus during radioactive decay release energy
- **FFRD2** - Explain how changes in the composition of an atom's nucleus during fission release energy
- **FFRD3** - Explain how changes in the composition of an atom's nucleus during fusion release energy