

High School Standards Correlated to Classes at MEC

Aquatic Adventures

NGSS

HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

ACOS

BIO.HS.7. Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.

PS.HS.8. Develop and use models to describe the cycling of matter (carbon, nitrogen, water) and flow of energy between abiotic and biotic factors in ecosystems. ES.HS.9. Develop and use models to trace the flow of water, nitrogen, and phosphorus through the hydrosphere, atmosphere, geosphere, and biosphere.

ES.HS.4. Engage in argument from evidence to evaluate how biological or physical changes within ecosystems affect the number and types of organisms, and that changing conditions may result in a new or altered ecosystem.

ES.HS.6. Obtain, evaluate, and communicate information to describe how human activity may affect biodiversity and genetic variation of organisms, including threatened and endangered species.

ES.HS.10. Design solutions for protection of natural water resources considering properties, uses, and pollutants.

ES.HS.12. Analyze and interpret data and climate models to predict how global or regional climate change can affect Earth's systems.

ES.HS.14. Analyze cost-benefit ratios of competing solutions for developing, conserving, managing, recycling, and reusing energy and mineral resources to minimize impacts in natural systems.

ES.HS.17. Obtain, evaluate, and communicate geological and biological information to determine the types of organisms that live in major biomes.

TASS

BIO1.LS2.2. Create a model tracking carbon atoms between inorganic and organic molecules in an ecosystem. Explain human impacts on climate based on this model.

MSF

HS.ESS.3. Discuss the impact of human activities on the environment, conservation activities, and efforts to maintain and restore ecosystems.

HS.ESS.5. Apply an understanding of ecological factors to explain relationships between Earth systems.

HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

HS.B.3. Investigate and explain how organisms interact with their environment.

HS.Zoo.3. Differentiate among animal life cycles, behaviors, adaptations, and relationships.

High School Standards Correlations

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HS.Bot.4.D. Research factors that might influence or alter plant stability and propose actions that may reduce the negative impacts of human activity.

GPS

SES1. Students will investigate the composition and formation of Earth systems, including the Earth's relationship to the solar system.E. Identify the transformations and major reservoirs that make up the rock cycle, hydrologic cycle, carbon cycle, and other important geochemical cycles.

SBO4. Students will explore the defense systems of plants and recognize the impact of plant diseases on the biosphere.

SG5. Students will apply geologic knowledge to the use of resources in the Earth and the control of human impacts on Earth's systems.

GSE

SES1. Obtain, evaluate, and communicate information to investigate the composition and formation of Earth systems, including the Earth's place in the solar system.

SEV1. Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem.

Rock Query

NGSS

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

ACOS

BIO.HS.6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.

ES.HS.2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.

ES.HS.8. Engage in an evidence-based argument to explain how over time Earth's systems.

BIO.HS.10. Construct an explanation and design a real-world solution to address changing conditions and ecological succession cause by density-dependent and/or density-independent factors.

ESS.HS.7. Analyze and interpret evidence regarding the theory of plate tectonics, including geologic activity along plate boundaries and magnetic patterns in undersea rocks, to explain the ages and movements of continental and oceanic crusts.

ESS.HS.8. Develop a time scale model of Earth's biological and geological history to establish relative and absolute age of major events in Earth's history.

ESS.HS.10. Construct an explanation from evidence for the processes that generate the transformation of rocks in Earth's crust, including chemical composition of minerals and characteristics of sedimentary, igneous, and metamorphic rocks.

ESS.HS.11. Obtain and communicate information about significant geologic characteristics that impact life in Alabama and the southeastern United States.

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ESS.HS.13. Analyze and interpret data of interactions between the hydrologic and rock cycles to explain the mechanical impacts and chemical impacts of Earth materials by water's properties.
ES.HS.17. Obtain, evaluate, and communicate geological and biological information to determine the types of organisms that live in major biomes.

MSF

HS.ESS.2. Develop an understanding of the history and evolution of the universe and Earth.
HS.ESS.3. Discuss factors which are used to explain the geological history of the Earth.
HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

TASS

ESS.ESS2.1. Given an environmental disaster, analyze its effect upon the geosphere, hydrosphere, atmosphere, and/or biosphere, including sphere to sphere interactions. Analysis should conclude with an identification of future research to improve our ability to predict such interactions.
ESS.ESS2.6. Make and defend a claim based on evidence to describe the formation and on-going availability of mined resources such as phosphorus, platinum, rare minerals, rare earth elements, and/or fossil fuels.
ESS.ESS2.5. Develop a visual model to illustrate the formation and reformation of rocks over time including processes such as weathering, sedimentation, and plate movement. The model should include a comparison of the physical properties of various rock types, common rock-forming minerals, and continental rocks versus oceanic crust.

GPS

SG3. Students will investigate the evidence for plate tectonics; evaluate the importance of Earth's internal processes and assess the relationship between plate tectonic boundary type and certain disasters such as earthquakes and volcanic eruptions.
SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems. A. Explain the cycling of energy through the process of photosynthesis and respiration.
SG1. Students will interpret the geologic history of the Earth.

GSE

SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms.
SES4. Obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct Earth's past.
SES2. Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards. SES6. Obtain, evaluate, and communicate information about how life on Earth responds to and shapes Earth's systems.
SES4. Obtain, evaluate, and communicate information to understand how rock relationships and fossils are used to reconstruct Earth's past.
SEV3. Obtain, evaluate, and communicate information to evaluate types, availability, allocation, and sustainability of energy resources.
SES3. Obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change.

Down to Earth

NGSS

HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

ACOS

BIO.HS.6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.

ES.HS.2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.

ES.HS.6. Obtain, evaluate, and communicate information to describe how human activity may affect biodiversity and genetic variation of organisms, including threatened and endangered species.

ESS.HS.11. Obtain and communicate information about significant geologic characteristics that impact life in Alabama and the southeastern United States.

ESS.HS.13. Analyze and interpret data of interactions between the hydrologic and rock cycles to explain the mechanical impacts and chemical impacts of Earth materials by water's properties.

ES.HS.10. Design solutions for protection of natural water resources considering properties, uses, and pollutants.

SC.HS.12. Design, build, and test the ability of a device to convert one form of energy into another form of energy.

ES.HS.1 Investigate and analyze the use of nonrenewable energy sources and propose solutions for their impact on the environment.

ES.HS.13. Obtain, evaluate, and communicate information based on evidence to explain how key natural resources, natural hazards, and climate changes influence human activity.

ES.HS.4. Engage in argument from evidence to evaluate how biological or physical changes within ecosystems affect the number and types of organisms, and that changing conditions may result in a new or altered ecosystem.

MSF

HS.Bot.4.D. Research factors that might influence or alter plant stability and propose actions that may reduce the negative impacts of human activity.

HS.ESS.3. Discuss the impact of human activities on the environment, conservation activities, and efforts to maintain and restore ecosystems.

HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

TASS

BIO1.LS1.8. Create a model of photosynthesis demonstrating the net flow of matter and energy into a cell. Use a model to explain energy transfer from light energy into stored chemical energy in the product.

BIO1.LS1.9. Create a model of aerobic respiration demonstrating flow of matter and energy out of a cell. Use the model to explain energy transfer mechanisms. Compare aerobic respiration to alternative processes of glucose metabolism.

ESS.ESS2.6. Make and defend a claim based on evidence to describe the formation and on-going availability of mined resources such as phosphorus, platinum, rare minerals, rare earth elements, and/or fossil fuels.

GPS

SB1. Students will analyze the nature of the relationships between structures and functions in living cells.

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems. A. Explain the cycling of energy through the process of photosynthesis and respiration.

SG5. Students will apply geologic knowledge to the use of resources in the Earth and the control of human impacts on Earth's systems.

GSE

SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells.

SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.

SPS3. Obtain, evaluate, and communicate information to support the Law of Conservation of Matter.

SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms.

SEV3. Obtain, evaluate, and communicate information to evaluate types, availability, allocation, and sustainability of energy resources.

SES3. Obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change.

Trust Swing

NGSS

HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

ACOS

SC.HS.8. Apply Newton's laws to predict the motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction.

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PHYS.HS.5. Construct models that illustrate how energy is related to work performed on or by an object and explain how different forms of energy are transformed from one form to another.

PS.HS.11. Design and conduct investigations to verify the law of conservation of energy, including transformations of potential energy, kinetic energy, thermal energy, and the effect of any work performed on or by the system.

MSF

HS.PS.2.A. Demonstrate and explain the basic principles of Newton's three laws of motion, including calculations of acceleration, force, and momentum.

HS.P.2.A. Use inquiry to investigate and develop an understanding of the kinematics and dynamics of physical bodies.

GPS

SP1. Students will analyze the relationships between force, mass, gravity, and the motion of objects.

SP2. Students will evaluate the significance of energy in understanding the structure of matter and the universe. SP3. Students will evaluate the forms and transformations of energy.

GSE

SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time.

SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

Animals In Motion

NGSS

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

ACOS

BIO.HS.6. Analyze and interpret data from investigations to explain the role of products and reactants of photosynthesis and cellular respiration in the cycling of matter and the flow of energy.

ES.HS.2. Use models to illustrate and communicate the role of photosynthesis and cellular respiration as carbon cycles through the biosphere, atmosphere, hydrosphere, and geosphere.

BIO.HS.7. Develop and use models to illustrate examples of ecological hierarchy levels, including biosphere, biome, ecosystem, community, population, and organism.

BIO.HS.14. Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time.

ES.HS.5. Engage in argument from evidence to compare how individual vs group behavior may affect species' chance to survive and reproduce over time.

ES.HS.17. Obtain, evaluate, and communicate geological and biological information to determine the types of organisms that live in major biomes.

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MSF

HS.B.3. Investigate and explain how organisms interact with their environment.

HS.Zoo.3. Differentiate among animal life cycles, behaviors, adaptations, and relationships.

HS.BI.6. Apply the concept of evolution to the diversity of organisms.

HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

TASS

BIO1.LS4.1. Evaluate scientific data collected from analysis of molecular sequences, fossil records, biogeography, and embryology. Identify chronological patterns of change and communicate that biological evolution is supported by multiple lines of empirical evidence that identify similarities inherited from a common ancestor.

GPS

SB3. Students will derive the relationship between single-celled and multi-celled organisms and the increasing complexity of systems. A. Explain the cycling of energy through the process of photosynthesis and respiration.

SBO4. Students will explore the defense systems of plants and recognize the impact of plant diseases on the biosphere.

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

GSE

SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms.

SEV1. Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem.

SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.

Invention Convention

NGSS

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

ACOS

ES.HS.10. Design solutions for protection of natural water resources considering properties, uses, and pollutants.

SC.HS.12. Design, build, and test the ability of a device to convert one form of energy into another form of energy.

MSF

HS.I.1. Apply inquiry-based and problem-solving processes and skills to scientific investigations.

GPS

SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.

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SCSh3. Students will identify and investigate problems scientifically.

SCSh8. Students will understand important features of the process of scientific inquiry.

Our Galaxy

NGSS

HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.

ACOS

ESS.HS.1. Develop and use models to illustrate the lifespan of the sun, including energy released during nuclear fusion that eventually reaches Earth through radiation. ESS.HS.3. Evaluate and communicate scientific information in reference to the life cycle of stars using data of both atomic emission and absorption spectra of stars to make inferences about the presence of certain elements.

MSF

HS.A.2. Develop an understanding of theories pertaining to the history of the universe and concepts related to the interaction of celestial bodies.

TASS

ESS.ESS1.4. Communicate scientific ideas to explain the nuclear fusion process and how elements with an atomic number greater than helium have been formed in stars, supernova explosions, or exposure to cosmic rays.

Hop, Slither, and Slide & Birds of a Feather

NGSS

HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

ACOS

BIO.HS.14. Analyze and interpret data to evaluate adaptations resulting from natural and artificial selection that may cause changes in populations over time.

MSF

HS.BI.6. Apply the concept of evolution to the diversity of organisms.

TASS

BIO1.LS4.1. Evaluate scientific data collected from analysis of molecular sequences, fossil records, biogeography, and embryology. Identify chronological patterns of change and communicate that biological evolution is supported by multiple lines of empirical evidence that identify similarities inherited from a common ancestor.

GPS

SB4. Students will assess the dependence of all organisms on one another and the flow of energy and matter within their ecosystems.

GSE

SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.

Canoeing

NGSS

HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

ACOS

SC.HS.8. Apply Newton's laws to predict the motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction.

PHYS.HS.5. Construct models that illustrate how energy is related to work performed on or by an object and explain how different forms of energy are transformed from one form to another.

PS.HS.11. Design and conduct investigations to verify the law of conservation of energy, including transformations of potential energy, kinetic energy, thermal energy, and the effect of any work performed on or by the system.

MSF

HS.PS.2.A. Demonstrate and explain the basic principles of Newton's three laws of motion, including calculations of acceleration, force, and momentum.

HS.P.2.A. Use inquiry to investigate and develop an understanding of the kinematics and dynamics of physical bodies.

GPS

SP1. Students will analyze the relationships between force, mass, gravity, and the motion of objects.

SP2. Students will evaluate the significance of energy in understanding the structure of matter and the universe. SP3. Students will evaluate the forms and transformations of energy.

GSE

SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time.

SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

Power Pole

NGSS

HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

ACOS

SC.HS.8. Apply Newton's laws to predict the motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction.

PHYS.HS.5. Construct models that illustrate how energy is related to work performed on or by an object and explain how different forms of energy are transformed from one form to another.

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PS.HS.11. Design and conduct investigations to verify the law of conservation of energy, including transformations of potential energy, kinetic energy, thermal energy, and the effect of any work performed on or by the system.

MSF

HS.PS.2.A. Demonstrate and explain the basic principles of Newton's three laws of motion, including calculations of acceleration, force, and momentum.

HS.P.2.A. Use inquiry to investigate and develop an understanding of the kinematics and dynamics of physical bodies.

GPS

SP1. Students will analyze the relationships between force, mass, gravity, and the motion of objects.

SP2. Students will evaluate the significance of energy in understanding the structure of matter and the universe.

SP3. Students will evaluate the forms and transformations of energy.

GSE

SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time.

SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

People of the Earth

NGSS

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

ACOS

ES.HS.6. Obtain, evaluate, and communicate information to describe how human activity may affect biodiversity and genetic variation of organisms, including threatened and endangered species.

ESS.HS.14. Construct explanations from evidence to describe how changes in the flow of energy through Earth's systems impact the climate.

ES.HS.15. Construct an explanation based on evidence to determine the relationships among management of natural resources, human sustainability, and biodiversity.

ES.HS.12. Analyze and interpret data and climate models to predict how global or regional climate change can affect Earth's systems.

ES.HS.13. Obtain, evaluate, and communicate information based on evidence to explain how key natural resources, natural hazards, and climate changes influence human activity.

MSF

HS.Bot.4.D. Research factors that might influence or alter plant stability and propose actions that may reduce the negative impacts of human activity.

HS.ESS.3. Discuss the impact of human activities on the environment, conservation activities, and efforts to maintain and restore ecosystems.

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GPS

SG5. Students will apply geologic knowledge to the use of resources in the Earth and the control of human impacts on Earth's systems.

GSE

SEV4. Obtain, evaluate, and communicate information to analyze human impact on natural resources. SEV5. Obtain, evaluate, and communicate information about the effects of human population growth on global ecosystems.

Navigation

NGSS

HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.

ACOS

SC.HS.8. Apply Newton's laws to predict the motion of a system by constructing force diagrams that identify the external forces acting on the system, including friction.

MSF

HS.PS.2.A. Demonstrate and explain the basic principles of Newton's three laws of motion, including calculations of acceleration, force, and momentum.

HS.P.2.A. Use inquiry to investigate and develop an understanding of the kinematics and dynamics of physical bodies.

GPS

SP1. Students will analyze the relationships between force, mass, gravity, and the motion of objects.

GSE

SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time.

SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.