Middle School Standards Correlated to Classes at The McDowell Environmental Center

Aquatic Adventures

NGSS

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

ACOS

SC.7.10. Use evidence and scientific reasoning to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of both animals and plants.
SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.

MSF

6.LS.3.D. Describe and summarize how an egg and sperm unite in the reproduction of angiosperms and gymnosperms.
6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth th include the effects on available resources.
8.LS.3.E. Explain energy flow in a specified system.
8.ESS,4,C. Examine weather forecasting and describe how meteorologists use atmospheric features and technology to predict the weather.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS

7.LS1.6. Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.
6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.

GPS

S6E3. Students will recognize the significant role of water in earth processes.

S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes. b. Plan and carry out an investigation to illustrate the role of sun's energy in atmospheric conditions that lead to the cycling of water.

Stream Studies

NGSS
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
MS-ESS2-4. Develop a model to describe the cyclling of water through Earth's systems driven by energy from the sun and the force of gravity.
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

ACOS
SC.7.8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms.

MSF
7.LS.3.A. Assess how an organism's chances for survival are influenced by adaptations to its environment.
8.LS.3.A.Analyze how adaptations to a particular environment can incrase an increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction.
8.ESS,4,C. Examine weather forecasting and describe how meteorologists use atmospheric features and technology to predict the weather.
8.ESS.4.D. Research the importance of the conservation of renewable and nonrenewable resources, including Mississippi, and justify methods that might be useful in decreasing the human impact on global warming.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
6.LS4.2. Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.
6.ESS2.4. Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.

6.ESS3.2. Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.

GPS
S7L4. Students will examine the dependence of organisms on one another and their environments.
S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.
S6E3. Students will recognize the significant role of water in earth processes.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.
S7L4. Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.
S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes. b. Plan and carry out an investigation to illustrate the role of sun's energy in atmospheric conditions that lead to the cycling of water.
S6E4. Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather. a. Analyze and interpret data to compare and contrast the composition of Earth's atmospheric layers and greenhouse gases.

Rock Query

NGSS
MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.
MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion year old history.
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate tectonics.

MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

ACOS
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.
SC.7.15. Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record nad the chronological order of fossil appearance in rock layers.
SC.6.4. Construct explanations from geologic evidence to identify patterns of Earth's major historical events.
SC6.5. Use evidence to explain how different geologic processes shape Earth's history over widely varying scales of space and time.
SC.6.8. Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials.
SC.6.9. Use models to explain how the flow of Earth's internal energy drives a cycling of matter between the Earht's surface and deep interior causing plate movements.

MSF
6.ESS.4.G. Research and cite evidence of current resources in Earth's systems.
7.ESS.4.A. Justify the importance of Earth materials to humans.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
6.LS.3.A. Compare and contrast the diversity of organisms due to adaptations to show how organisms have evolved as a result of environmental changes.
6.ESS.4.B. Draw conclusions about the historical processes that contribute to the shaping of planet Earth.
6.ESS.4.B. Draw conclusions about the historical processes that contribute to the shaping of planet Earth.
7.ESS.4.B. Explain the causes and effects of historical processes shaping the planet Earth.
8ESS.4.B. Describe the cause and effect relationship between the composition of and movement within the Earth's lithosphere.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.
8.LS4.1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.
8.ESS2.1. Analyze and interpret data to support the assertion that rapid or gradual geographic changes lead to drastic population changes and extinction events.
8.ESS2.4. Gather and evaluate evidence that energy from the earth's interior drives convection cycles within the aesthenosphere which creates changes within the lithosphere including plate movements, plate boundaries, and sea-floor spreading.
6.ESS3.1.Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.

GPS

S7L5. Students will examine the evolution of living things through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring.
S6E5. Students will investigate the scientific view of how the earth's surface is formed.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S7L5. Obtain, evaluate, and communicate information from multiple sources to explain the theory of evolution of living organisms through inherited characteristics.
S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.

Down to Earth

NGSS
MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.
MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion year old history.
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate tectonics.
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

ACOS
SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.

SC.7.15. Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record nad the chronological order of fossil appearance in rock layers.
SC.6.4. Construct explanations from geologic evidence to identify patterns of Earth's major historical events.
SC6.5. Use evidence to explain how different geologic processes shape Earth's history over widely varying scales of space and time.
SC.6.8. Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials.
SC.6.9. Use models to explain how the flow of Earth's internal energy drives a cycling of matter between the Earht's surface and deep interior causing plate movements.

MSF
6.ESS.4.G. Research and cite evidence of current resources in Earth's systems.
7.ESS.4.A. Justify the importance of Earth materials to humans.
8.LS.3.E. Explain energy flow in a specified system.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
6.LS.3.A. Compare and contrast the diversity of organisms due to adaptations to show how organisms have evolved as a result of environmental changes.
6.ESS.4.B. Draw conclusions about the historical processes that contribute to the shaping of planet Earth.
7.ESS.4.B. Explain the causes and effects of historical processes shaping the planet Earth.
8ESS.4.B. Describe the cause and effect relationship between the composition of and movement within the Earth's lithosphere.
8.ESS.4.D. Research the importance of the conservation of renewable and nonrenewable resources, including Mississippi, and justify methods that might be useful in decreasing the human impact on global warming.
7.ESS.4.D. Conclude why factors, such as lack of resources and climate can limit the growth of populations in specific niches in the ecosystem.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.
8.LS4.1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.
8.ESS2.1. Analyze and interpret data to support the assertion that rapid or gradual geographic changes lead to drastic population changes and extinction events.
8.ESS2.4. Gather and evaluate evidence that energy from the earth's interior drives convection cycles within the aesthenosphere which creates changes within the lithosphere including plate movements, plate boundaries, and sea-floor spreading.
6.ESS3.2. Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.
6.ESS3.3. Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

GPS
S7L5. Students will examine the evolution of living things through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring.
S6E5. Students will investigate the scientific view of how the earth's surface is formed.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S7L5. Obtain, evaluate, and communicate information from multiple sources to explain the theory of evolution of living organisms through inherited characteristics.
S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.

Trust Swing

NGSS
MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

ACOS
SC.8.8. Use Newton's first law to demonstrate and explain that an object is either at rest or moves at a constant velocity unless acted upon by external forces.
SC.8.9 Use Newton's second law to demonstrate and explain how changes in an object's motion depend on the sum of the external forces on the object and the mass of the object.
SC.8.14. Use models to construct an explanation of how a system of objects may contain varying types and amounts of potential energy.
SC.8.16. Apply the law of conservation of energy to develop arguments supporting the claim that when the kinetic energy of an object changes, energy is transferred to or from that object.

MSF
6.PS.2.F. Develop a logical argument to explain how the forces which affect the motion of objects has real-world applications including (but not limited to) examples of Mississippi's contributions.
8.PS.1.F. Recognize Newton's 3 Laws of Motion and identify situations that illustrate each law.
6.PS.2.C. Investigate and describe the effects of forces acting on objects.

TASS
8.PS2.3. Create a demonstration of an object in motion and describe the position, force, and direction of the object.

6.PS3.3. Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.

GPS
S8P3. Student will investigate relationships between force, mass, and motion of objects.
S8P2. Students will be familiar with the forms and transformations of energy.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.
S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transfer from one form to another within a system.

Forest Connections

NGSS
MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probablility of successful reproduction of animals and plants respectively.
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.
MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives the process.

ACOS
SC.7.10. Use evidence and scientific reasoning to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of both animals and plants.
SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
SC.7.6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

SC.7.8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms.
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.
SC.6.7. Use models to construct explanations of the various biogeochemical cycles of Earth (water, carbon, nitrogen) and the flow of energy that drives these processes.

MSF
6.LS.3.D. Describe and summarize how an egg and sperm unite in the reproduction of angiosperms and gymnosperms.
6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth th include the effects on available resources.
8.LS.3.E. Explain energy flow in a specified system.
6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth th include the effects on available resources.
7.LS.3.A. Assess how an organism's chances for survival are influenced by adaptations to its environment.
8.LS.3.A.Analyze how adaptations to a particular environment can incrase an increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
6.ESS.4.A Compare and contrast the relative positions and components of the Earth's crust.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
7.LS1.6. Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.
6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
6.LS4.2. Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equlibrium.
L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.
8.ESS2.3. Describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.

GPS
S7L4. Students will examine the dependence of organisms on one another and their environments.
S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.

S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.
S7L4. Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.

Meet a Tree

NGSS
MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probablility of successful reproduction of animals and plants respectively.
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.

ACOS
SC.7.10. Use evidence and scientific reasoning to explain how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of both animals and plants.
SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.

MSF
6.LS.3.D. Describe and summarize how an egg and sperm unite in the reproduction of angiosperms and gymnosperms.
6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth th include the effects on available resources.
8.LS.3.E. Explain energy flow in a specified system.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
7.LS1.6. Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.

GPS
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE

Canoeing

NGSS
MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

ACOS
SC.8.14. Use models to construct an explanation of how a system of objects may contain varying types and amounts of potential energy.
SC.8.16. Apply the law of conservation of energy to develop arguments supporting the claim that when the kinetic energy of an object changes, energy is transferred to or from that object.

MSF
6.PS.2.C. Investigate and describe the effects of forces acting on objects.

TASS
6.PS3.3. Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.

GPS
S8P2. Students will be familiar with the forms and transformations of energy.

GSE
S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transfer from one form to another within a system.

Value of a Tree

NGSS

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

ACOS

SC.7.5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
SC.7.8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms.
SC.7.7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.

MSF

8.LS.3.E. Explain energy flow in a specified system.
7.LS.3.A. Assess how an organism's chances for survival are influenced by adaptations to its environment.
8.LS.3.A.Analyze how adaptations to a particular environment can incrase an increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction.
7.LS,3.E. Compare and contrast how organisms obtain and utilize matter and energy.
8.ESS.4.D. Research the importance of the conservation of renewable and nonrenewable resources, including Mississippi, and justify methods that might be useful in decreasing the human impact on global warming.
7.ESS.4.D. Conclude why factors, such as lack of resources and climate can limit the growth of populations in specific niches in the ecosystem.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS

6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.
6.LS4.2. Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.
L.LS1.9. Construct a scientific explanation based on compiled evidence for the processes of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.
6.ESS3.2. Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.

Middle School Standards Correlations

NGSS=Next Generation Science Standards, ACOS=Alabama Course of Study, GPS=Georgia Performance Standards, MSF=Mississippi Science Framework, TASS=Tennessee Academic Standards for Science, GSE=Georgia Standards of Excellence

6.ESS3.3. Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

GPS
S7L4. Students will examine the dependence of organisms on one another and their environments.
S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.
S6-8CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts ot understand how the world works.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS7. Students will question scientific claims and arguments effectively.
S6-8CS8. Students will be familiar with the character of scientific knowledge and how it is achieved.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE
S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.
S7L4. Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.

Native Americans and the Earth

NGSS
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem

ACOS
SC.7.6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

MSF
6.LS.3.A. Describe and predict interactions (among and within populations) and the effects of these interactions on population growth th include the effects on available resources.

TASS
6.LS2.3. Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.

GPS

GSE

McDowell Woods

NGSS
MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

ACOS

MSF
7.ESS.4.D. Conclude why factors, such as lack oof resources and climate can limit the growth of populations in specific niches in the ecosystem.

TASS
6.ESS3.3. Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

GPS
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE

Invention Convention

NGSS
MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ACOS

MSF
6.I,1.f. Evaluate the results or solutions by considering how well a product or design met the challenge to solve a problem.
6.I.1. Conduct a scientific investigation utilizing appropriate process skills.

TASS
6.ETS1.1. Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.

GPS
S8R1. Students will synthesize science content through standard research protocols in earth, life, and physical science.
S8R2. Students will investigate an accessible scientific research problem in earth, life, or physical science.
S6-8CS5. Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S6-8CS6. Students will communicate scientific ideas and activities clearly.
S6-8CS9. Students will understand the important features of the process of scientific inquiry.

GSE

Big Sky

NGSS
MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

ACOS
SC.6.1. Create and manipulate models to explain the occurrences of day/night cycles, length of year, seasons, tides, eclipses, and lunar phases based on patterns of the observed motions of celestial bodies.

MSF
6.ESS4.F. Differentiate between objects in the universe.
7.ESS.4.F. Distinguish the structure and movements of objects in the solar system.
8.ESS.4.E. Explain how the tilt of Earth's axis and the position of the Earth in relation to the sun determine climatic zones, seasons, and lengths of the days.
8.ESS,4.F. Describe the hierarchical structure of the universe and examine the expanding universe ti include its age and history and the modern techniques used to measure objects and distances in the universe.

TASS
8.ESS1.2. Explain the role of gravity in the formation of our sun and planets. Extend this explanation to add gravity's effect on the motion of celestial objects in our solar system and Earth's ocean tides.

GPS
S6E1. Students will explore current scientific views of the universe and how those views evolved.
S6E2. Students will understand the effects of the relative positions of the earth, moon, and sun.

GSE
S6E1. Obtain, evaluate, and communicate information about current scientific views of the universe and how those views evolved.
S6E1. a. Ask questions to determine changes in models of Earth's position in the solar system, and origins of the universe as evidence that scientific theories changes with the addition of new information (including the Big Bang as it describes the formation of the universe).
S6E1. b. Analyze and interpret data to compare and contrast the planets in our solar systems in terms of size relative to Earth, surface and atmospheric features, relative distance from the sun, and ability to support life.
S6E2. Obtain, evaluate, and communicate information about the effects of the relative positions of the sun, Earth, and moon.

Other Day Classes with Flexible Lesson Plans Addressing a Variety of Standards

Authors and Explorers
Canoeing
Mysterious Medley
Nature Hike
Navigation
Survival Skills
Value of a Tree
Stream Studies* - recommended for advanced 5th grade classes in spring term only