A Correlation of
Science and Technology for Children® and
Science and Technology Concepts for Middle Schools™
to the Mississippi Science Framework

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This document gives a quick visual guide to the alignment of Science and Technology for Children® (STC®) and Science and Technology Concepts for Middle Schools™ (STC/MS™) units with the Mississippi Science Framework. Although each STC and STC/MS unit was developed for use at a specific grade level, there is some flexibility in grade placement — any unit may be used a grade above or below the one for which it was developed. Because of this flexibility, many curriculum planners prefer to think of each unit as covering a three-level band of grades (as indicated in the chart below). In addition, STC/MS units can be used at grade 9 as well.

All fourth-grade through sixth-grade STC unit kits include a Discovery Deck, a set of extensions for the unit. When the Discovery Deck meets or helps to meet a content standard, the abbreviation "DD" will follow the STC unit abbreviation.

Recommended Grade Levels and Unit Abbreviations

The National Science Resources Center (NSRC), developer of the STC and STC/MS programs, recommends the units be used within the following grade ranges.

	Grades	**Life and Earth Science**		**Physical Science and Technology**	
STC	K–2	*Organisms* (O)	*Weather* (W)	*Solids and Liquids* (SL)	*Comparing and Measuring* (CM)
	1–3	*The Life Cycle of Butterflies* (LCB)	*Soils* (S)	*Changes* (C)	*Balancing and Weighing* (BW)
	2–4	*Plant Growth and Development* (PGD)	*Rocks and Minerals* (RM)	*Chemical Tests* (CT)	*Sound* (So)
	3–5	*Animal Studies** (AS)	*Land and Water** (LW)	*Electric Circuits** (EC)	*Motion and Design** (MD)
	4–6	*Microworlds** (Mw)	*Ecosystems** (E)	*Food Chemistry** (FC)	*Floating and Sinking** (FS)
	5–7	*Experiments with Plants** (EP)	*Measuring Time** (MT)	*Magnets and Motors** (MM)	*The Technology of Paper** (TP)
STC/MS	6–8**	*Human Body Systems* (HBS)	*Catastrophic Events* (CE)	*Properties of Matter* (POM)	*Energy, Machines, and Motion* (EMM)
		Organisms—From Macro to Micro (OMM)	*Earth in Space* (ES)	*Light* (L)	*Electrical Energy and Circuit Design* (EECD)

*Unit kit includes a Discovery Deck (DD).
**STC/MS units may also be used at grade 9.

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Kindergarten	
Content Strands: Life Science (L), Earth and Space Science (E), and Physical Science (P)	
Competency	**STC Unit(s)**
1. Develop an understanding that living and non-living things have identifiable characteristics. (L)	
a. Compare similarities between parents and offspring.	O
b. Classify animals as farm, zoo, pet, wild (non-domesticated), or ocean (aquatic) according to appearance and action.	
c. Identify animals by habitat (land, air and water).	O
d. Differentiate among humans, other animals, and plants.	O
e. Classify objects as living or non-living based on characteristics.	O
f. Illustrate parts of a plant.	O
g. Identify major external parts of living organisms (human, insects, and plants).	O
2. Demonstrate an understanding of the five senses. (L)	
a. Identify the five senses.	O
b. Select and describe objects by size, color, shape, texture, and use.	O
c. Identify taste (sweet/sour).	The sense of taste is never used in STC units.
d. Identify smells (pleasant/unpleasant).	O
e. Classify sounds (fast/slow, loud/soft).	O
f. Classify materials by texture (smooth/rough, soft/hard).	O
3. Explore proper nutrition and the relationship to personal hygiene. (L)	
a. Classify foods by food groups.	
b. Recognize good dental hygiene.	
4. Investigate the different types of observable and measurable characteristics of matter. (P)	
a. Classify objects according to color, shape, size, texture, and use.	SL, CM
b. Identify a solid and a liquid.	SL
c. Identify objects that sink or float.	SL, CM
d. Demonstrate the interactions between magnets and objects.	SL, CM
e. Distinguish between warmer and cooler using a thermometer.	
f. Demonstrate knowledge of fire safety.	
5. Explore and use nonstandard units of length, weight and capacity/volume. (P)	
a. Model and discuss terms of comparison such as more/less, taller/shorter, heavier/lighter, hotter/colder, and before/after.	SL, CM
b. Measure the length, weight and capacity of objects using nonstandard units.	CM
c. Investigate volume/capacity (holds more, less, or about the same) using different shape containers and materials.	CM
6. Collect, organize and interpret data. (L, P, E)	
a. Collect, model and construct graphs using real objects.	W, CM
b. Interpret and analyze data in graphical form (bar graphs, pictographs, etc.).	W, CM
7. Develop an understanding of the Earth as a planet; its structure, and its processes. (E)	
a. Describe the Earth according to its shape.	
b. Describe the Earth according to its physical make-up (land, water, air).	W

c. Distinguish the characteristics of the seasons.	
d. Describe weather safety and weather differences by using terms related to weather.	W
e. Compare and contrast characteristics of day and night.	
f. Distinguish between continents as landforms and oceans as large bodies of water.	
8. Describe the appearance of the sky by day and by night. (E)	
a. Describe the appearance of the sun in the sky (very bright; visible only by day).	
b. Describe the appearance of the stars in the sky (faint; some brighter than others; visible only by night).	
c. Describe the appearance of the moon in the sky (visible by day; bright by night; different shapes).	
d. Describe the appearance of clouds in the sky (sometimes covering part or all of the sky; sometimes white or dark gray; sometimes bringing rain; sometimes colorful at sunset; sometimes hiding the sun, moon, and stars).	W
9. Discover how environmental concerns relate to land, water, and air. (E)	
a. Identify substances that can be recycled.	
b. Determine how environmental hazards can affect organisms living in specific areas.	
First Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC Unit(s)**
1. Explore the basic patterns of living systems. (L)	
a. Examine the function of plant parts.	O, S
b. Illustrate the parts of a seed.	O
c. Observe and sequence the life cycles of plants, insects, and animals.	O, LCB
d. Identify major organs of the human body such as the heart, lungs, brain, intestines, and stomach.	
2. Investigate the diversity of living things. (L, P)	
a. Classify plants and animals according to external features (scales, feathers, fur, etc.).	O, LCB, S
b. Identify plants and animals indigenous to Mississippi.	
c. Compare plants and animals in Mississippi with those found in the jungle, desert and arctic regions.	
d. Explain the term “extinct” as related to animals.	
3. Identify and describe daily changes in the sky. (E, P)	
a. Describe the changing position of the sun in the daytime sky.	
b. Describe the changing position of the stars in the nighttime sky.	
c. Describe the changing position of the moon in the sky.	
d. Identify day and night as parts of a cycle of regular change.	
4. Examine the structure of the solar system. (E, P)	
a. Name the nine planets.	
b. Identify the sun as the major source of energy.	W
5. Discover the diversity of the Earth’s surface. (E)	

a. Identify features of the Earth's surface such as mountains, lakes, oceans, and rivers.	
b. Describe the difference between the oceans and the continents.	
6. Explore changes that occur in the Earth's atmosphere. (E)	
a. Record, graph, and compare weather differences including sunshine, clouds, rain, wind, and snow.	W
b. Identify the environmental changes that occur with the seasons.	
7. Investigate how environmental concerns relate to the quality of life. (E)	
a. Examine pollution and how recycling helps the environment.	S (pollution not included)
b. Identify ways to reduce the amount of wastes thrown away.	S
8. Examine the different types of observable and measurable changes that matter can undergo. (P)	
a. Observe and discuss the transformation of solids, liquids, and gases.	SL, C
b. Identify solids, liquids, and gases as states of matter.	SL, C
c. Compare/contrast objects according to size, shape, color, texture, and use.	SL, C
d. Manipulate magnets to demonstrate the interaction of magnets and other objects.	SL
9. Explore the concepts of length, weight, temperature, and capacity/volume using nonstandard and standard (English and metric) units of measurement.	
a. Use nonstandard (paper clips, unifix cubes) and standard (inches, centimeters) units to explore length.	CM
b. Compare weight of objects (heavy/light).	BW
c. Explore and estimate capacity/volume of various containers in nonstandard units.	CM
d. Explore the concept of hot/cold using a non-mercury thermometer.	W
Second Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC Unit(s)**
1. Explore the functions and systems of living things. (L)	
a. Explain how plants are used as a food source by living organisms and relate this to the food chain.	
b. Dissect and explain the function of the parts of a seed.	O, PGD
c. Describe the function of the major internal organs to include the heart, brain, lungs, liver, kidneys, and intestines.	
d. Investigate the digestive system.	
2. Research the diversity and interaction of living things. (L)	
a. Define and recognize "endangered" species.	
b. Compare and contrast physical and behavioral characteristics of different species.	O
c. Analyze the suitability of different environments in meeting the needs of plants and animals.	O, LCB, S, PGD
d. Classify animals in vertebrate categories (fish, bird, mammal, amphibian, and reptile).	O
3. Explore the structure of the Solar System. (E)	
a. List and describe the nine planets in order.	

b. Identify the sun as a star.	
4. Identify and describe weekly and monthly changes in the sky. (E)	
a. Describe the apparent shapes of the moon from week to week.	
b. Identify the moon's phases as parts of a cycle of regular change.	
5. Recognize the diversity of the Earth's composition. (E)	
a. Create a model depicting the major layers of the Earth.	
b. Discover and explore the characteristics of various earth materials such as clay, silt, sand, pebbles, and gravel.	S, RM
6. Analyze changes that occur in the Earth's atmosphere. (E)	
a. Introduce the water cycle.	
b. Describe the different types of clouds and the weather associated with each.	W
7. Investigate how environmental concerns relate to the quality of life. (E)	
a. Design and construct a compost pile.	S
b. Observe the benefits of composting to the community.	S
8. Predict and explore the effects of forces and energy on matter. (P)	
a. Introduce and discuss the concept that matter takes up space.	C
b. Classify solids, liquids and gases as states of matter according to their characteristics.	SL, C, CT
c. Determine the properties of the states of matter by experimenting.	SL, CM, CT
d. Manipulate magnets to show that they are only attracted to certain metals.	SL
9. Investigate the properties of color, heat, and light. (P)	
a. Demonstrate light and heat as forms of energy.	
b. Identify the colors of the spectrum.	SL
c. Demonstrate how sound travels through different media (wood, plastics, water, air).	So
10. Determine length, mass, weight, and capacity/volume using the appropriate standard (English and metric) units of measurement. (L, E, P)	
a. Use appropriate tools and terms to explore measurement.	W, CM, S, C, BW, PGD, CT, So
b. Estimate and measure length, mass, weight, and capacity/volume using standard units of measurement (inch, foot, yard, centimeter, meter, ounce, pound, gram, kilogram, cup, pint, quart, and liter).	W, CM, S, C, BW, PGD, CT, So
c. Categorize measurement terms according to length, mass, weight, and capacity/volume.	W, SL, CM, S, C, BW, PGD, So
d. Use convincing arguments to justify the selection of a specific unit of measure for a given item.	
e. Collect and compare seasonal temperatures using a Fahrenheit thermometer.	W (seasonal temperatures not included)
Third Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC Unit(s)**
1. Investigate the interactions of objects and organisms. (L, E)	
a. Identify major causes of endangerment and extinction.	AS DD
b. Distinguish between harmful and helpful human actions on the environment.	LW

c. Describe methods to prevent pollution of the environment.	LW DD
2. Explore the components of living systems. (L)	
a. Classify and identify different types of seeds.	PGD
b. Compare and contrast dicot and monocot seeds.	
c. Demonstrate photosynthesis.	
d. Show that plants grow from other parts and explain the germination of seeds.	S, PGD
e. Label the parts and functions of a flower.	PGD
f. Explain methods of pollination.	PGD
g. Understand the functions of the skeletal system and label major bones of the human body.	
3. Identify and describe the appearance of stars in the night sky. (E, P)	
a. Locate and identify constellations as imaginary patterns of stars that remain fixed in shape from night to night.	
b. Describe the actual nature of stars as distant suns that appear small and faint only because of their great distances.	
4. Discover how internal and external forces affect the Earth's surface. (E)	
a. Describe the three major layers of the Earth.	LW DD
b. Examine and identify rocks of different types (metamorphic, sedimentary, and igneous).	RM
c. Discuss places fossils can be found.	RM
d. Relate how internal forces affect the Earth's surface including earthquakes and volcanoes.	RM, LW DD
5. Examine changes in matter. (P)	
a. Identify and demonstrate chemical changes.	C, CT, MD, MD DD
b. Identify and demonstrate physical changes.	C, CT, MD, MD DD
6. Analyze changes in matter. (E)	
a. Label an illustration of the water cycle.	LW
b. Collect and graph weather data.	
7. Develop the process of measurement and related concepts. (L, E, P)	
a. Identify and compare differences among length, weight/mass, and capacity/volume using English and metric measures.	C, BW, PGD, LW
b. Choose appropriate units of measurement for length, weight/mass, and capacity/volume.	BW, PGD, So, LW
c. Convert between pints, quarts, and gallons.	
d. Convert miles to feet and yards.	
e. Compare metric measurements to English measurements.	
f. Using various types of instruments measure:	
length in millimeters, meters, kilometers	
mass in grams and kilograms	
capacity/volume in milliliters and liters	LW (extension only)
time to nearest minute	LW (extension only)
temperature in Celsius and Fahrenheit	LW (extension only)
g. Use manipulatives and gridded regions to determine area of shapes.	
Fourth Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC Unit(s)**

1. Investigate the ability of living things to adapt to their environment. (L)	
a. Compare food chains and food webs.	E
b. Compare and contrast adaptations necessary for animals and plants to survive in different habitats.	AS, AS DD, Mw DD, E, E DD
2. Explore the interactions of components in living systems. (L)	
a. Identify parts and basic functions of various body systems (circulatory, respiratory, digestive, skeletal and nervous systems).	
b. Analyze the circulatory system.	
c. Group animals as invertebrates or vertebrates.	AS
d. Explore the four requirements necessary for photosynthesis.	E
e. Compare and contrast flowering and non-flowering plants.	PGD
3. Communicate an understanding of the interaction of bodies in the solar system. (E, P)	
a. Explain why the apparent size of an object depends on its distance from the observer.	MD
b. Describe the interaction between the Earth, Sun, Earth's moon, and planets of the solar system.	
c. Describe the apparent motion of constellations in the night sky (east to west throughout the night, east to west throughout the year).	
4. Identify and describe the visual and telescopic appearance of planets and moons. (E, P)	
a. Locate and identify planets as bright, shining bodies that move in front of the background of constellations.	
b. Explain the nature of telescopes as devices that collect light and enlarge the apparent size of distant objects to reveal otherwise unseen features.	
c. Describe the physical features of the moon (craters, plains, mountains) and the planets.	
5. Discover the effects of external forces on the Earth's surface. (E)	
a. Describe how external forces including heat, wind and water affect the Earth's surface.	RM, LW, LW DD, E, E DD
b. Using maps, students identify watershed and run-off patterns of local areas.	LW
c. Group landform examples by the forces that may have created them.	LW, LW DD
6. Explore changes that occur in the Earth's atmosphere. (E)	
a. Analyze and predict the weather using the thermometer, anemometer, rain gauge, barometer and hygrometer.	
b. Recognize and collect data of extreme weather conditions.	
7. Discover how environmental concerns relate to the hydrosphere, lithosphere, and atmosphere. (E, L)	
a. Describe ways to protect the air we breathe.	E DD
b. Recognize the need for conservation of water resources.	LW, E, E DD
c. Discuss the ways man can protect and manage organisms in the environment.	AS DD, LW DD, E
8. Investigate the changes in the states of matter. (P)	
a. Observe that matter occupies space and has mass and volume.	
b. Demonstrate transformations of the states of matter.	CT
c. Explore and classify physical and chemical changes.	CT

9. Examine the different forms of energy. (L, E, P)	
a. Differentiate energy as potential or kinetic energy.	EC, MD
b. Identify and explore forms of energy such as heat, sound, light, or electricity.	CT, So, EC, EC DD, MD, FC, FC DD
c. Demonstrate the use of the sun as an energy source.	PGD, AS, EC DD, E, E DD
10. Develop the process of measurement and the concepts related to units of measurement. (L, E, P)	
a. Measure a given object using specified scientific measurement (English and/or metric).	RM, CT, So, AS, LW, EC, MD, Mw, E, FC, FS
b. Select, use, compare and convert within the appropriate standard (English and metric) system of measurement.	RM, CT, So, AS, LW, EC, MD, Mw, E, FC, FS
c. Identify the attributes of length, weight, capacity/volume, mass, time and temperature using English and metric units of measurement.	So, FS
d. Calculate and solve problems with elapsed time.	MD
Fifth Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC Unit(s)**
1. Identify and describe structures and functions in living systems. (L, E)	
a. Investigate levels of organization in organisms including cells, tissues, organs, organ systems, whole organisms, and ecosystems.	Mw, Mw DD, E, E DD (tissues, organs, and organ systems not included)
b. Explore ecosystems and biomes.	E
2. Identify and describe reproduction and heredity of organisms. (L, P)	
a. Define and recognize examples of sexual and asexual reproduction.	AS, Mw, Mw DD, E, EP, EP DD
b. Explore how traits are used to classify individual inheritance patterns.	AS, Mw, E, EP DD
3. Determine the factors that influence the regulation and behavior of organisms. (L, E)	
a. Identify and describe resources needed to grow, reproduce, maintain, and survive in a changing environment.	AS, AS DD, LW, Mw, Mw DD, E, E DD, EP, EP DD
b. Investigate ways organisms adapt to their environment.	AS, AS DD, LW, E, EP DD
4. Examine the physical factors of populations as they relate to the formation of an ecosystem. (L, E)	
a. Identify, describe, and illustrate the roles among producers, consumers, and decomposers in a food web.	E
b. Investigate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.	E
5. Explore the diversity and adaptations of organisms. (L, E)	
a. Classify organisms by their similarities.	AS, AS DD, E, E DD
b. Explore and explain biological adaptations in a particular environment.	AS, AS DD, Mw, E, EP
c. Research and investigate environmental changes and the inability of a species to adapt.	AS DD, E
6. Investigate the structure of the Earth. (E)	
a. Investigate the structure of the atmosphere (gas-air), hydrosphere (liquid-water), and lithosphere (solid-land).	LW

b. Examine how organisms affect the composition of the Earth and its atmosphere.	LW, E DD
c. Analyze processes that cause changes on Earth.	LW, LW DD, E, E DD
d. Explore fossils as indicators of how life and environmental conditions have changed.	Mw DD
7. Investigate the Earth as a part of the solar system. (E, P)	
a. Explore how the Earth's motion defines the day and the year and influences the phases of the moon and eclipses.	MT, MT DD
b. Explain how gravity influences the action of the tides.	
c. Explain and illustrate how the tilt of the Earth's axis and Earth's revolution around the Sun create the seasons.	
8. Identify properties and changes of matter. (E, P)	
a. Observe and explore physical and chemical properties such as density, boiling/freezing point, and solubility of a substance.	LW, LW DD, EC, Mw, Mw DD, FC, FS, FS DD
b. Explore, observe, discuss, and record physical and chemical changes using everyday substances.	FC, FC DD, FS DD
c. Recognize elements that combine chemically to produce compounds.	
d. Demonstrate the ability to use simple measuring devices using metric and English units.	AS, LW, MD, Mw, E, FC, FS, EP, MT, TP
9. Investigate the effect motions and forces have on objects. (L, E, P)	
a. Explore, measure, and graph the motion of an object.	MD, MD DD
b. Explore and measure the effect of force on an object.	MD
10. Examine the transformations of forms of energy. (P)	
a. Design and construct simple and compound machines.	
b. Design and construct electrical circuits (open, closed, series, parallel).	EC, MM
c. Design and construct an electromagnet.	EC
Sixth Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC and/or STC/MS Unit(s)**
1. Investigate structure and functions in living systems. (L, E)	
a. Identify, compare, and contrast levels of organization including cells, tissues, organs, organ systems, and organisms.	Mw, Mw DD, HBS, OMM
b. Compare and contrast patterns and interactions of ecosystems and biomes.	
2. Compare and classify the reproduction and heredity of organisms. (L)	
a. Differentiate between sexual and asexual reproduction.	OMM
b. Determine how traits are used to classify individual inherited patterns.	EP DD, OMM
3. Explore how changing resources will influence the regulation and behavior of organisms. (L, E)	
a. Evaluate the significance of resources required by organisms.	E, E DD, HBS, OMM
b. Investigate, compare/contrast ways organisms adapt to their environment.	HBS, OMM
4. Explore how different populations determine the formation of an ecosystem. (L, E)	
a. Compare/contrast the roles among producers, consumers, and decomposers in a food web.	E, OMM

b. Manipulate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.	E, E DD, OMM
5. Explore the unique characteristics and adaptations of organisms. (L, E)	
a. Evaluate and chart the similarities of organisms.	E, E DD, EP, OMM
b. Propose and relate environmental changes and the adaptive characteristics that influence the extinction of a species.	E, E DD
6. Model the structure of the Earth system past and present. (E)	
a. Construct and explain the structure of the atmosphere (gas-air), hydrosphere (liquid-water), lithosphere (solid-land), and changes that occur within.	CE, ES
b. Examine the changes and processes that alter the Earth's system.	E, E DD, CE, ES
c. Analyze fossils as indicators of how life and environmental conditions have changed.	Mw DD, ES
7. Investigate the Earth in relation to the solar system. (E, P)	
a. Demonstrate how the Earth's motion influences the day, year, phases of the moon, and eclipses.	MT, MT DD, CE, ES
b. Explore how gravity influences the motion of all celestial bodies.	EMM, ES
c. Demonstrate how the tilt of the Earth's axis and Earth's revolution around the sun create the seasons.	CE, ES
8. Investigate structure, properties, and changes of matter. (E, P)	
a. Analyze properties such as density, boiling point, and solubility of a substance.	FS, FS DD, POM, EECD
b. Record and interpret physical and chemical changes using everyday substances.	FC, FC DD, FS, FS DD, HBS, POM, EECD
c. Differentiate between common elements that combine chemically to produce compounds.	POM, EECD
d. Demonstrate the ability to use simple measuring devices using metric and English units.	FS, MT, HBS, CE, POM, EMM, OMM, ES ,L EECD
9. Evaluate the effect of force on the motion of an object. (L, E, P)	
a. Analyze, measure, and graph the motion of an object.	MT, MM, MM DD, EMM, ES, L, EECD
b. Experiment and measure the effect of force on an object.	MM, CE, EMM, ES, L, EECD
10. Examine the transfer of energy in many different forms. (L, E, P)	
a. Observe and manipulate energy as potential or kinetic.	EMM
b. Investigate forms of energy such as heat, sound, light, or electricity.	HBS, CE, POM, EMM, ES, L, EECD
c. Recognize the sun as a major source of energy.	E, E DD, MT, CE, ES, L, EECD
Seventh Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC and/or STC/MS Unit(s)**
1. Compare and contrast structure and function in living systems. (L)	
a. Compare and contrast plant and animal cells through investigations.	OMM
b. Describe the process of respiration and the use of its products.	
c. Illustrate the parts of the digestive system and the interaction of each part.	HBS, OMM

d. Illustrate the parts of and interaction between the respiratory and circulatory system.	HBS, OMM
e. Illustrate the parts of the excretory system and the interaction of each part.	OMM
2. Explore the processes of the reproduction and heredity of organisms. (L)	
a. Distinguish genes as sections of DNA molecules that carry the genetic code for inherited traits.	OMM
b. Examine the concepts of homozygous and heterozygous traits.	OMM
c. Explain mitosis and relate it to an organism's growth and repair processes.	OMM
3. Determine how organisms co-exist in their environment. (L)	
a. Demonstrate that cells interact with their environment.	HBS, OMM
b. Investigate homeostasis as it relates to plants and animals.	HBS (humans only)
4. Explore how environmental factors of population influence the formation of an ecosystem. (L, E)	
a. Describe the process of photosynthesis and the use of its products.	EP, OMM, L
b. Design an experiment in plant behavior to include responses to water, gravity, and light.	EP, OMM
c. Investigate and research environmental concerns of the land, water, and air.	TP, CE, POM, EMM, ES
d. Analyze the importance of biological diversity in communities and ecosystems.	OMM
5. Examine survival strategies of organisms over many generations. (L)	
a. Apply concepts of adaptation by analyzing how organisms are classified into groups and subgroups.	EP
b. Research animal adaptations and behaviors as related to survival strategies.	HBS (humans only)
c. Explain how natural and man-made pressures cause extinction.	ES (man-made pressures not included)
6. Explore the composition and changes of the Earth system. (E, P)	
a. Identify minerals by using any or all of the following tests: streak, cleavage, fracture, hardness, specific gravity, and special properties.	CE
b. Research and explain how crustal movements result in earthquakes, volcanoes, mountain formation, etc.	CE, ES
c. Distinguish between chemical and physical weathering.	CE (physical only)
d. Identify how forces such as erosion and deposition create landforms.	CE, ES
e. Research landforms and fossils specific to Mississippi.	
f. Compare properties and composition of salt water, fresh water, and brackish water.	
g. Investigate the interactive forces that produce weather to include moisture, temperature, fronts, air masses, and cloud formations.	CE, ES
7. Explain the causes of lunar phases, eclipses, and Earth's seasons. (E)	
a. Distinguish between radiating objects (the sun and the stars) and reflecting objects (the planets and their moons).	CE, ES

b. Characterize lunar phases in terms of their appearance, their visibility at a given time of day or night, and their progression through time.	MT, MT DD, ES
c. Illustrate the relationship between lunar phases and the phase angle between the sun and the moon as seen from Earth.	ES
d. Illustrate the alignments of the Earth, the moon, and the sun, which give rise to solar and lunar eclipses and explain why these eclipses do not occur every month.	MT, MT DD, ES
e. Explain how the position of the earth in relation to the sun has an effect on seasonal weather changes.	CE, ES
8. Investigate chemical and physical properties of matter. (P)	
a. Determine and measure experimentally: boiling point, melting point, density, and solubility.	MT, TP, POM
b. Demonstrate understanding that chemical and physical properties determine a substance's identity.	HBS, CE, POM
c. Compare common metals, nonmetals, and metalloids by name, symbol, and characteristics.	POM
d. Recognize elements that will combine to form compounds.	POM
e. Relate density to mass and volume.	POM
9. Investigate motions and forces. (P)	
a. Using SI units, measure and graph the motion of an object by its position, direction of motion, and speed.	EMM, ES, L, EECD
b. Investigate Newton's Laws of Motion.	EMM, ES
c. Using the scientific method, design an experiment to test how different types of surfaces affect friction.	CE, EMM
10. Investigate the sources of energy. (P, E)	
a. Investigate the sun as a major source of energy.	EP, MT, TP, CE, ES, L, EECD
b. Compare and contrast how the three forms of thermal energy flow.	CE
c. Research one or more of the sources of energy (nuclear, solar, wind, geothermal, hydro).	CE, EMM, ES, L, EECD
Eighth Grade	
Content Strands: Life Science (L), Earth and Space Science (E), Physical Science (P)	
Competency	**STC/MS Unit(s)**
1. Analyze and relate structure and function in living systems. (L)	
a. Analyze body systems and their functions.	HBS, OMM
b. Relate interactions among body systems.	HBS, OMM
c. Identify the parts of and show the interaction between the reproductive and endocrine systems.	OMM
d. Examine diseases that are the result of body system failures or infection by other organisms.	HBS
2. Analyze genetic continuity of organisms. (L)	
a. Define meiosis by relating the process to genetic continuity.	OMM
b. Compare and contrast genotype and phenotype.	OMM
c. Explain the advantages and disadvantages of both hybrid and purebred species of plants and animals.	
d. Examine genes as a section of a DNA molecule that carries the genetic code for inherited traits.	OMM

3. Determine the economic factors that influence the regulation and behavior of organisms. (L, E)	
a. Appraise the economic factors associated with regulations and protection of the environment.	ES
b. Explain environmental degradation to include overpopulation, biodiversity, sea-level rise, and enhanced greenhouse effect.	
4. Examine the physical factors of populations as they relate to the formation of ecosystems. (L, E)	
a. Analyze the adaptation of representative organisms to aquatic or terrestrial environments.	OMM
b. Evaluate the effects of urbanization on aquatic or terrestrial ecosystems.	OMM
c. Analyze how predation and food webs help structure communities.	OMM
5. Investigate atmospheric movements that affect the Earth's system. (E, P)	
a. Analyze the cycles including nitrogen, water, carbon dioxide, and oxygen cycle.	CE (water only)
b. Use weather maps for analyzing and predicting weather.	CE
c. Construct a weather map to forecast the weather over a region, giving temperature in degrees Celsius.	CE
6. Investigate the Earth's geological past. (L, E)	
a. Identify the components/stages of a geological timetable and discuss how the environment (including animals and landforms) has changed in each period.	
b. Describe methods and tools used in dating rocks and fossils.	ES
c. Discuss Mississippi's geological areas.	
7. Describe the appearance and nature of our galaxy and the universe. (E)	
a. Explain the relationship between distance and light-travel time (light year).	ES, L
b. Identify and describe deep-sky objects visible from Earth (diffuse nebulae, galactic and globular clusters, planetary nebulae, supernova remnants, "spiral nebulae").	ES (supernova only)
c. Identify and describe the Milky Way as the galaxy to which we belong.	ES
d. Identify and describe our galaxy in terms of its components (core of older stars, spiral arms of gas and dust with younger stars, halo, "dark matter") and our location within it.	ES (identify and describe our galaxy in terms of its components only)
e. Identify and describe "spiral nebulae" as distant galaxies.	
f. Identify and describe different types of galaxies in terms of their shape (spiral, barred spiral, elliptical, irregular) and level of activity.	
8. Analyze the properties of matter. (P)	
a. Determine experimentally physical and chemical properties including density, conductivity, and reactions with water, acids, and bases.	POM
b. Interpret information given on the periodic table to predict reactions between elements.	POM
c. Write simple formulas for compounds.	POM
d. Distinguish among atoms, ions, and molecules.	POM (extension only)

e. Determine the density of regular and irregular objects.	POM
f. Determine experimentally how acidic or basic a substance is using a pH scale indicator.	
g. Introduce the factor label method for unit conversions in the metric system.	
9. Explore the application of simple and complex machines. (P)	
a. Apply and demonstrate Newton's Three Laws of Motion using simple machines.	EMM
b. Design and construct simple and complex machines.	EMM
10. Investigate the transfer of energy. (P)	
a. Measure the transfer of heat between two objects using the Celsius scale.	CE, POM, L
b. Illustrate wave motion in different media.	CE, L
c. Mechanical waves (sound waves, water waves, earthquake waves, etc.) and electromagnetic waves (light, infrared, x-rays, etc.).	CE (earthquake only), L