

Activate Learning IQWST Alignment to 2015 Alabama Course of Study Grades 6-8

The page numbers listed represent each section in which students are being prepared to meet the 2015 Alabama Course of Study *Science*.



Key: A=Lesson, L=Lesson, R=Reading, AL=Appendix Lesson

Grade 8 - Physical Science

Alabama Content Standard	IQWST alignment
<p>Matter and Its Interactions 1. Analyze patterns within the periodic table to construct models (e.g., molecular-level models, including drawings; computer representations) that illustrate the structure, composition, and characteristics of atoms and molecules.</p>	<p>Introduction to Chemistry 1 - How Can I Smell Things from a Distance? Lesson 6: L6R2, Lesson 8: A8.2, A8.3, L8R1, L8R3, Lesson 9: A9.1, L9R1, Lesson 10: A10.1, L10R1, Lesson 16: A16.1</p> <p>Introduction to Chemistry 2--How Can I Make New Stuff from Old Stuff? Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 7: A7.1, L7R1, Lesson 8: A8.2, L8R2, A8.3, L8R3, Lesson 9: A9.1, L9R1, Lesson 10: 10R1, Lesson 12: A12.1a, L12R2</p>
<p>Matter and Its Interactions 2. Plan and carry out investigations to generate evidence supporting the claim that one pure substance can be distinguished from another based on characteristic properties.</p>	<p>Physical Science 2: Lesson 8: L8R1</p> <p>Introduction to Chemistry 1: Lesson 7: A7.1, L7R1, L7R2, Lesson 8: A8.1, L8R1, L8R2, A8.3, L8R3</p> <p>Introduction to Chemistry 2: Lesson 1: A1.1, A1.2, L1R2, A1.3, Lesson 2: A2.1, L2R1, A2.2, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 4: A4.1, L4R1, A4.2, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, L6R1, L6R2, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, L8R1, A8.2, L8R2, A8.3, L8R3, Lesson 9: A9.1, Lesson 10: A10.1, L10R1, Lesson 11: A11.1, L11R1, A11.2, Lesson 12: A12.1a, Lesson 13: A13.1, L13R1, Lesson 14: A14.1, L14R1, A14.2, Appendix Lesson 1: A1.1, AL1R1, Appendix Lesson 2: A2.1, AL2R1</p>
<p>Matter and Its Interactions 3. Construct explanations based on evidence from investigations to differentiate among compounds, mixtures, and solutions. a. Collect and analyze information to illustrate how synthetic materials (e.g., medicine, food additives, alternative fuels, plastics) are derived from natural resources and how they impact society.</p>	<p>Introduction to Chemistry 2 - How Can I Make New Stuff from Old Stuff? Lesson 1: A1.1, L1R1, A1.2, L1R2, A1.3, Lesson 2: A2.1, L2R1, A2.2, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 4: A4.2, L4R1, A4.2, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, L6R1, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, L8R1, A8.2, L8R2, A8.3, L8R3, Lesson 9: A9.1, Lesson 10: A10.1, L10R1, Lesson 11: A11.1, L11R1, A11.2, Lesson 12: A12.1a, A12.1, L12R1, A12.2, L12R2, Lesson 13: A13.1, L13R1, Lesson 14: A14.1, L14R1, A14.2, Appendix Lesson 1: A1.1, AL1R1 Appendix Lesson 2: A2.1, AL2R1</p>
<p>Matter and Its Interactions 4. Design and conduct an experiment to determine changes in particle motion, temperature, and state of a pure substance when thermal energy is added to or removed from a system.</p>	<p>Physical Science 1 - Can I Believe My Eyes? Lesson 8: A8.1, A8.2, L8R1, A8.4, L8R3</p> <p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going?</p>

	<p>Lesson 6: A6.2, A6.3, A6.4</p> <p>Introduction to Chemistry 1 - How Can I Smell Things from a Distance? Lesson 1: A1.1, L1R1, A1.2, L1R2, Lesson 2: A2.1, L2R1, A2.2, A2.3, L2R2, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 4: A4.1, L4R1, A4.2, L4R2, Lesson 5: A5.1, A5.2, L5R1, A5.3, Lesson 6: A6.1, A6.2, Lesson 9: A9.2, Lesson 11: A11.1, A11.2, L11R1, Lesson 12: A12.1, L12R1, A12.2, Lesson 13: A13.1, L13R1, A13.2, A13.3, L13R1, A13.4, L13R2, Lesson 14: A14.1, L14R1, A14.2, L14R2, Lesson 15: A15.1, L15R1, A15.2, L15R2, Lesson 16: L16R1, A16.2</p> <p>Introduction to Chemistry 2 - How Can I Make New Stuff from Old Stuff? Lesson 9: L9R1, Lesson 10: A10.1, L10R1</p>
<p>Matter and Its Interactions 5. Observe and analyze characteristic properties of substances (e.g., odor, density, solubility, flammability, melting point, boiling point) before and after the substances combine to determine if a chemical reaction has occurred.</p>	<p>Introduction to Chemistry 1 - How Can I Smell Things from a Distance? Lesson 7: A7.1, L7R1, L7R2, Lesson 8: A8.1, L8R1, L8R2, A8.3, L8R3</p> <p>Introduction to Chemistry 2 - How Can I Make New Stuff from Old Stuff? Lesson 1: A1.1, L1R1, A1.2, L1R2, A1.3, Lesson 2: A2.1, L2R1, A2.2, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 4: A4.1, A4.2, L4R1, A4.2, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, L6R1, L6R2, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, L8R1, A8.2, L8R2, A8.3, L8R3, Lesson 9: A9.1, Lesson 10: A10.1, L10R1, Lesson 11: A11.1, L11R1, A11.2, Lesson 12: A12.1a, A12.1, L12R1, A12.2, L12R2, Lesson 13: A13.1, L13R1, Lesson 14: A14.1, L14R1, A14.2, Appendix Lesson 1: A1.1, AL1R1, Appendix Lesson 2: A2.1, AL2R1</p>
<p>Matter and Its Interactions 6. Create a model, diagram, or digital simulation to describe conservation of mass in a chemical reaction and explain the resulting differences between products and reactants.</p>	<p>Introduction to Chemistry 2 - How Can I Make New Stuff from Old Stuff? Lesson 1: A1.1, L1R1, A1.2, L1R2, A1.3, Lesson 2: A2.1, L2R1, A2.2, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 4: A4.2, L4R1, A4.2, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, L6R1, L6R2, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, L8R1, A8.2, L8R2, A8.3, L8R3, Lesson 9: A9.1, Lesson 10: A10.1, L10R1, Lesson 11: A11.1, L11R1, A11.2, Lesson 12: A12.1a, A12.1, L12R1, A12.2, L12R2, Lesson 13: A13.1, L13R1, Lesson 14: A14.1, L14R1, A14.2, Appendix Lesson 1: A1.1, AL1R1</p>
<p>Matter and Its Interactions 7. Design, construct, and test a device (e.g., glow stick, hand warmer, hot or cold pack, thermal wrap) that either releases or absorbs thermal energy by chemical reactions (e.g., dissolving ammonium chloride or calcium chloride in water) and modify the device as needed based on criteria (e.g., amount/concentration, time, temperature).*</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 8: A8.1, A8.2, A8.3, Appendix Lesson 1: A1.1, AL1R1</p> <p>Introduction to Chemistry 2 - How Can I Make New Stuff from Old Stuff? Lesson 14: A14.2</p>
<p>Motion and Stability: Forces and Interactions 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 an external force (e.g., model car on a table remaining at rest until pushed).</p>	<p>Physical Science 3 - How Will it Move? Lesson 1: A1.1, A1.2, Lesson 2: A2.1, A2.2, H2.2, L2R2, A2.3, A2.4, Lesson 3: A3.1, A3.2, H3.2, A3.3, L3R1, Lesson 4: A4.1, A4.2, L4R1, L4R2, Lesson 5: A5.1, A5.2, L5R2, Lesson 6: A6.1, A6.2, A6.3, Lesson 7: A7.1, H7.1, A7.2, A7.3, Lesson 8: A8.1, L8R1, A8.2, A8.3</p>
<p>Motion and Stability: Forces and Interactions 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 (e.g., billiard balls moving when hit with a cue stick).</p>	<p>Physical Science 3 - How Will it Move? Lesson 1: A1.1, A1.2, Lesson 2: A2.1, A2.2, H2.2, L2R2, A2.3, A2.4, Lesson 3: A3.1, A3.2, H3.2, A3.3, L3R1, Lesson 4: A4.1, A4.2, L4R1, L4R2, Lesson 5: A5.1, A5.2, L5R2, Lesson 6: A6.1, A6.2, A6.3, Lesson 7: A7.1, H7.1, A7.2, A7.3, Lesson 8: A8.1, L8R1, A8.2, A8.3</p>
<p>Motion and Stability: Forces and Interactions 10. Use Newton's third law to design a model to demonstrate and explain the resulting motion of two colliding objects (e.g., two cars bumping into each other, a hammer hitting a nail).*</p>	<p>Physical Science 3 - How Will it Move? Lesson 1: A1.2, L1R1, Lesson 4: A4.2, A4.3, Lesson 5: A5.1, A5.2, L5R2, Lesson 6: A6.1, A6.2, Lesson 8: A8.1, A8.2</p>

<p>Motion and Stability: Forces and Interactions</p> <p>11. Plan and carry out investigations to evaluate how various factors (e.g., electric force produced between two charged objects at various positions; magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) affect the strength of electric and magnetic forces.</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 9: A9.1, A9.2, L9R1, A9.3</p> <p>Physical Science 3 - How Will it Move? Lesson 2: A2.3, A3.3, Lesson 8: A8.2, Appendix Lesson 1: A1.1, AL1R1</p>
<p>Motion and Stability: Forces and Interactions</p> <p>12. Construct an argument from evidence explaining that fields exist between objects exerting forces on each other (e.g., interactions of magnets, electrically charged strips of tape, electrically charged pith balls, gravitational pull of the moon creating tides) even when the objects are not in contact.</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 3: A3.2, L3R1</p> <p>Physical Science 3 - How Will it Move? Lesson 2: A2.3, L2R2, Lesson 3: A3.3, Lesson 4: A4.2, Lesson 8: A8.3</p>
<p>Energy</p> <p>13. Create and analyze graphical displays of data to illustrate the relationships of kinetic energy to the mass and speed of an object (e.g., riding a bicycle at different speeds, hitting a table tennis ball versus a golf ball, rolling similar toy cars with different masses down an incline).</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 1: A1.1, A1.2, L1R1, Lesson 2: A2.1, A2.2, L2R2, A2.3, Lesson 3: A3.1, Lesson 8: A8.4</p>
<p>Energy</p> <p>14. Use models to construct an explanation of how a system of objects may contain varying types and amounts of potential energy (e.g., observing the movement of a roller coaster cart at various inclines, changing the tension in a rubber band, varying the number of batteries connected in a series, observing a balloon with static electrical charge being brought closer to a classmate's hair).</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 3: A3.2, A3.3, Lesson 4: A4.1, A4.3, L4R1, Lesson 5: A5.2, A5.3, A5.4, L5R1, Lesson 6: A6.1, L6R1, Lesson 7: A7.1, Lesson 8: A8.4</p> <p>Physical Science 3 - How Will It Move? Lesson 1: A1.2, L1R1, Lesson 3: A3.1, 3.2, H3.2, A3.3, L3R1, Lesson 4: A4.1, A4.3, Lesson 6: A6.1, A6.2, A6.3, Lesson 7: A7.1, H7.1, A7.2, A7.3, Lesson 8: A8.1, L8R1, A8.2, A8.3</p>
<p>Energy</p> <p>15. Analyze and interpret data from experiments to determine how various factors affect energy transfer as measured by temperature (e.g., comparing final water temperatures after different masses of ice melt in the same volume of water with the same initial temperature, observing the temperature change of samples of different materials with the same mass and the same material with different masses when adding a specific amount of energy).</p>	<p>Physical Science 1 – Can I Believe My Eyes? Lesson 8: A8.2, L8R1, A8.3, L8R3</p> <p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 8: A8.1, A8.2, A8.3, A8.4,</p> <p>Introduction to Chemistry 1 - How Can I Smell Things from a Distance? Lesson 11: A11.1, Lesson 12: A12.1, Lesson 13: A13.1, L13R1, A13.2, A13.4, L13R2, Lesson 15: A15.1, L15R1, A15.2, L15R2, Lesson 16: L16R1, A16.2</p> <p>Introduction to Chemistry 2 – How Can I Make New Stuff from Old Stuff? Appendix Lesson 2: A2.1, AL2R1</p>
<p>Energy</p> <p>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 the object (e.g., bowling ball hitting pins, brakes being applied to a car).</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 3: L3R1, A3.3, Lesson 4: A4.1, A4.2, A4.3, L4R1, Lesson 5: A5.1, A5.2, A5.3, A5.4, L5R1, Lesson 6: A6.1, Lesson 9: A9.1, Lesson 10: A10.1, Lesson 11: A11.1, L11R1</p> <p>Physical Science 3 - How Will it Move? Lesson 1: A1.1, A1.2, L1R1, Lesson 5: A5.1, A5.2, L5R2, Lesson 6: A6.1, A6.2, Lesson 8: A8.3</p>
<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>17. Create and manipulate a model of a simple wave to predict and describe the relationships between wave properties (e.g., frequency, amplitude, wavelength) and energy.</p>	<p>Physical Science 1 – Can I Believe My Eyes? Lesson 12: A12.2, L12R1, H12.1, Lesson 13: A13.1, L13R1</p>

<p>a. Analyze and interpret data to illustrate an electromagnetic spectrum.</p>	<p>Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 7: A7.1, Lesson 10: A10.1</p>
<p>Waves and Their Applications in Technologies for Information Transfer 18. Use models to demonstrate how light and sound waves differ in how they are absorbed, reflected, and transmitted through different types of media.</p>	<p>Physical Science 1 – Can I Believe My Eyes? Lesson 2: A2.1, A2.2, L2R1, Lesson 3: A3.1, L3R1, A3.2, L3R2, Lesson 5: A5.1, A5.2, L5R2, Lesson 6: A6.1, A6.2, A6.3, L6R2, Lesson 7: A7.1, A7.2, A7.3, Lesson 8: A8.1, A8.3, Lesson 9: A9.1, A9.2, Lesson 10: A10.1, L10R1, A10.2, L10R2, Lesson 11: A11.1, A11.2, Lesson 12: A12.1, A12.2, L12R1, H12.1, Lesson 13: A13.1, L13R1 Physical Science 2 - Why Do Some Things Stop While Others Keep Going? Lesson 7: A.7.1, L7R1, Lesson 10: L10R1</p>
<p>Waves and Their Applications in Technologies for Information Transfer 19. Integrate qualitative information to explain that common communication devices (e.g., cellular telephones, radios, remote controls, Wi-Fi components, global positioning systems [GPS], wireless technology components) use electromagnetic waves to encode and transmit information.</p>	<p>Physical Science 1 – Can I Believe My Eyes? Lesson 7: L7R1, Lesson 12: A12.1, H12.1, Lesson 13: L13R1, A13.2, Appendix Lesson 1: A1.1, AL1R1</p>

Grade 7 – Life Science

Alabama Content Standard	IQWST alignment
<p>From Molecules to Organisms: Structures and Processes</p> <p>1. Engage in argument from evidence to support claims of the cell theory.</p>	<p>Life Science 2 - What is Going on Inside Me? Lesson 1: A1.1, L1R1, A1.1, A1.2, A1A.3, Lesson 2: A2.1, A2.2, A2.3, L2R1</p>
<p>From Molecules to Organisms: Structures and Processes</p> <p>2. Gather and synthesize information to explain how prokaryotic and eukaryotic cells differ in structure and function, including the methods of asexual and sexual reproduction.</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 1: A1.1, A1.2, A1.3, Lesson 2: A2.1, A2.2, L2R1, L1R2, A2.3,</p>
<p>From Molecules to Organisms: Structures and Processes</p> <p>3. Construct an explanation of the function (e.g., mitochondria releasing energy during cellular respiration) of specific cell structures (i.e., nucleus, cell membrane, cell wall, ribosomes, mitochondria, chloroplasts, and vacuoles) for maintaining a stable environment.</p>	<p>Life Science 2 - What is Going on Inside Me? Lesson 5: A5.2, L5R1, A5.3, Lesson 7: A7.2</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 5: A5.1</p>
<p>From Molecules to Organisms: Structures and Processes</p> <p>4. Construct models and representations of organ systems (e.g., circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific functions.</p>	<p>Life Science 2 - What is Going on Inside Me? Lesson 3: A3.1, L3R1, A3.2, Lesson 4: Intro to Lesson 4, A4.1, A4.2, A4.3, Lesson 5: A5.1, Lesson 6: A6.2, L6R1, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, Lesson 10: A10.1, L10R1, Lesson 11: A11.1</p>
<p>Ecosystems: Interactions, Energy, and Dynamics</p> <p>5. Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.</p> <p>a. Obtain, evaluate, and communicate information about how food is broken down through chemical reactions to create new molecules that support growth and/or release energy as it moves through an organism.</p> <p>b. Generate a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.</p>	<p>Introduction to Chemistry 3 - How Does Food Provide My Body with Energy? Lesson 1: L1R1, A1.2, L1R2, Lesson 2: A2.1, A2.2, L2R1, Lesson 3: A3.1, L3R1, A3.3, L3R3, Lesson 4: A4.1, L4R1, Lesson 5: A5.1, L5R1, A5.2, L5R2A, L5R2B, Lesson 5: L5R2B, Lesson 6: A6.1, L6R1, Lesson 7: A7.2, L7R2, A7.3, Lesson 8: L8R1, Lesson 9: A9.1, L9R1, A9.2, L9R2A, L9R2B, A9.3, L9R3, Lesson 10: A10.2, L10R2, A10.3, L10R3</p> <p>Life Science 1 - Where Have All the Creatures Gone? Lesson 4: A4.2, Lesson 3: A3.1, A3.2, A3.3, L3R1, A3.4</p> <p>Life Science 2 - What is Going on Inside Me? Lesson 4: Intro to Lesson 4, A4.1, A4.4, Lesson 5: A5.4, Lesson 6: A6.1, A6.3, Lesson 9: A9.1, L9R1</p>
<p>Ecosystems: Interactions, Energy, and Dynamics</p> <p>6. Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 2: A2.1, Lesson 9: A9.1, H9.2</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 9: Intro to Lesson 9, A9.1, A9.2, A10.1, Lesson 10: A10.2, A10.3, L10R1, A10.4, A10.5, H10.5</p>
<p>Ecosystems: Interactions, Energy, and Dynamics</p> <p>7. Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (e.g., deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations.</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 2: L2R1, Lesson 4: A4.1, Lesson 5: L5R1, A5.2, L5R2, Lesson 6: A6.2, Lesson 9: A9.3, L9R2, Lesson 10: A10.1, Lesson 11: A11.1, Lesson 12: A12.1, L12R1, Lesson 13: A13.1, A13.2</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 8: A8.2, A8.3</p>

	<p>Introduction to Chemistry 3 - How Does Food Provide My Body with Energy? Lesson 10: A10.1, L10R1, A10.2, L10R2, A10.3, L10R3</p>
<p>Ecosystems: Interactions, Energy, and Dynamics 8. Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms (e.g., competition, predation, mutualism, commensalism, parasitism).</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 1: A1.1, L1R1, A1.2, H1.2, A1.3, L1R2, Lesson 6: A6.1, L6R1, Lesson 7: A7.3, Lesson 9: A9.2, L9R1, A9.3, L9R2</p> <p>Life Science 2 - What is Going on Inside Me? Lesson 4: L4R2</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 2: A2.2, L2R2</p>
<p>Ecosystems: Interactions, Energy, and Dynamics 9. Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g., using scientific, economic, and social considerations regarding purifying water, recycling nutrients, preventing soil erosion).</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 1: A1.1, L1R1, A1.3, L1R2, Lesson 10: L10R1, Appendix Lesson 1: A1.1, AL1R1, AL1R2</p>
<p>Ecosystems: Interactions, Energy, and Dynamics 10. Use evidence and scientific reasoning to explain how characteristic animal behaviors (e.g., building nests to protect young from cold, herding to protect young from predators, attracting mates for breeding by producing special sounds and displaying colorful plumage, transferring pollen or seeds to create conditions for seed germination and growth) and specialized plant structures (e.g., flower brightness, nectar, and odor attracting birds that transfer pollen; hard outer shells on seeds providing protection prior to germination) affect the probability of successful reproduction of both animals and plants.</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 7: L7R1, L8R1, Lesson 8: L8R1</p> <p>Life Science 2 - What is Going on Inside Me? Lesson 8: L8R1</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 2: A2.2, Appendix Lesson 2: A2.3</p>
<p>Ecosystems: Interactions, Energy, and Dynamics 11. Analyze and interpret data to predict how environmental conditions (e.g., weather, availability of nutrients, location) and genetic factors (e.g., selective breeding of cattle or crops) influence the growth of organisms (e.g., drought decreasing plant growth, adequate supply of nutrients for maintaining normal plant growth, identical plant seeds growing at different rates in different weather conditions, fish growing larger in large ponds than in small ponds).</p>	<p>Introduction to Chemistry 3 - How Does Food Provide My Body with Energy? Lesson 6: A6.1, L6R1</p> <p>Life Science 1 - Where Have All the Creatures Gone? Lesson 4: L4R2</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 8: A8.3, L8R2, Lesson 9: L9R1</p>
<p>Heredity: Inheritance and Variation of Traits 12. Construct and use models (e.g., monohybrid crosses using Punnett squares, diagrams, simulations) to explain that genetic variations between parent and offspring (e.g., different alleles, mutations) occur as a result of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information.</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 1: A1.1, A1.2, A1.3, Lesson 2: A2.1, A2.2, L2R1, L1R2, A2.3, Lesson 3: A3.1, A3.2, A3.3, Lesson 4: A4.1, A4.2, A4.3, L4R1, Lesson 5: A5.2, L5R1, Lesson 8: A8.1, A8.2, A8.3, A8.4, L8R2 Lesson 9: Intro to Lesson 9, A9.1, L9R1, Lesson 10: A10.1, A10.2, A10.3, L10R1, A10.4, A10.5, H10.5, Lesson 11: A11.1, A11.2, A11.3, Appendix Lesson 2: A2.1</p>
<p>Heredity: Inheritance and Variation of Traits 13. Construct an explanation from evidence to describe how genetic mutations result in harmful, beneficial, or neutral effects to the structure and function of an organism.</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 1: A1.3, L1R1, Lesson 3: L3R1, Lesson 5: A5.1, Lesson 6: A6.1, A6.2, L6R1, Lesson 7: A7.1, A7.2, L7R1</p>
<p>Heredity: Inheritance and Variation of Traits</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 11: L11R1, Appendix Lesson 2: A2.3, Appendix Lesson 3: A3.1, AL3R1</p>

<p>14. Gather and synthesize information regarding the impact of technologies (e.g., hand pollination, selective breeding, genetic engineering, genetic modification, gene therapy) on the inheritance and/or appearance of desired traits in organisms.</p>	
<p>Unity and Diversity 15. Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record and the chronological order of fossil appearance in rock layers.</p>	<p>Concept builder - Macroevolution Lesson 1: A1.1, L1R1, A1.2, A1.3</p>
<p>Unity and Diversity 16. Construct an explanation based on evidence (e.g., cladogram, phylogenetic tree) for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, including living fossils (e.g., alligator, horseshoe crab, nautilus, coelacanth).</p>	<p>Life Science 1 - Where Have All the Creatures Gone? Lesson 7: A7.1, A7.2, Lesson 8: A8.1</p> <p>Life Science 3 - Why Do Organisms Look the Way They Do? Appendix Lesson 1: A1.1, A1.2</p> <p>Concept builder - Macroevolution Lesson 1: A2.1, L1R1</p>
<p>Unity and Diversity 17. Obtain and evaluate pictorial data to compare patterns in the embryological development across multiple species to identify relationships not evident in the adult anatomy.</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Appendix Lesson 1: A1.3</p>
<p>Unity and Diversity 18. Construct an explanation from evidence that natural selection acting over generations may lead to the predominance of certain traits that support successful survival and reproduction of a population and to the suppression of other traits.</p>	<p>Life Science 3 - Why Do Organisms Look the Way They Do? Lesson 9: A9.2, A9.3, Appendix Lesson 2: A2.2</p> <p>Concept Builder: Macroevolution Lesson 3: A3.1, A3.2, L3R1</p>

Grade 6 – Earth Science

Alabama Content Standard	IQWST alignment
<p>Earth’s Place in the Universe 1. Create and manipulate models (e.g., physical, graphical, conceptual) 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.</p>	<p>Earth Science 2 – What Makes the Weather Change? Lesson 7: A7.3, A7.4, A7.5, Lesson 8: A8.2, L8R1, 8.3, L8R2, A8.4</p> <p>Concept Builder – Earth and Space Science Lesson 1: A1.1, A1.2, A1.3, Lesson 3: A3.1, A3.2, A3.3</p>
<p>Earth’s Place in the Universe 2. Construct models and use simulations (e.g., diagrams of the relationship between Earth and manmade satellites, rocket launch, International Space Station, elliptical orbits, black holes, life cycles of stars, orbital periods of objects within the solar system, astronomical units and light years) to explain the role of gravity in affecting the motions of celestial bodies (e.g., planets, moons, comets, asteroids, meteors) within galaxies and the solar system.</p>	<p>Concept Builder – Earth and Space Science Lesson 1: A1.1, A1.2, Lesson 2, A2.1, A2.2, Lesson 3: A3.1, A3.2, A3.3</p>
<p>Earth’s Place in the Universe 3. Develop and use models to determine scale properties of objects in the solar system (e.g., scale model representing sizes and distances of the sun, Earth, moon system based on a one-meter diameter sun).</p>	<p>Concept Builder – Earth and Space Science Lesson 2: A2.1, A2.2, Lesson 3: A3.1, A3.2, A3.3</p>
<p>Earth’s Systems 4. Construct explanations from geologic evidence (e.g., change or extinction of particular living organisms; field evidence or representations, including models of geologic cross-sections; sedimentary layering) to identify patterns of Earth’s major historical events (e.g., formation of mountain chains and ocean basins, significant volcanic eruptions, fossilization, folding, faulting, igneous intrusion, erosion).</p>	<p>Earth Science 3 – How Is the Earth Changing? Lesson 2: A2.1, L2R1, A2.2, Appendix Lesson 2: A2.1, A2.2, AL2R1</p>
<p>Earth’s Systems 5. Use evidence to explain how different geologic processes shape Earth’s history over widely varying scales of space and time (e.g., chemical and physical erosion; tectonic plate processes; volcanic eruptions; meteor impacts; regional geographical features, including Alabama fault lines, Rickwood Caverns, and Wetumpka Impact Crater).</p>	<p>Earth Science 1 – How Does Water Shape Our World? Lesson 1: A1.1, A1.2, A1.3, L1R2, Lesson 2: A2.1, L2R1, A2.2, Lesson 7: A7.1, L7R1, Lesson 8: A8.1, L8R1, A8.2, A8.3, L8R2, Lesson 9: A9.1, L9R1, Lesson 10: A10.1, A10.2, L10R1, Lesson 12: A12.3, Lesson 13: A13.1, A13.2</p> <p>Earth Science 3 – How Is the Earth Changing? Lesson 1: A1.1, A1.2, L1R1, A1.3, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, A6.2, L6R1, Lesson 9: A9.3, Lesson 10: A10.1, L10R1, A10.2, A10.3</p>
<p>Earth’s Systems 6. Provide evidence from data of the distribution of fossils and rocks, continental shapes, and seafloor structures to explain past plate motions.</p>	<p>Earth Science 3 – How Is the Earth Changing? Lesson 2: A2.1, L2R1, Lesson 3: A3.1, Lesson 7: A7.1, Lesson 9: A9.2, Lesson 10: A10.1, L10R1, A10.2, A10.3</p>
<p>Earth’s Systems 7. Use models to construct explanations of the various biogeochemical cycles of Earth (e.g., water, carbon, nitrogen) and the flow of energy that drives these processes.</p>	<p>Earth Science 1 – How Does Water Shape Our World? Lesson 3: A3.1, A3.2, L3R1, A3.3, L3R2, A3.4, Lesson 4: A4.1, A4.2, L4R1, A4.3, A4.4, Lesson 5: A5.1, A5.2, Lesson 6: A6.1, L6R1, A6.2, Lesson 12: A12.3, Lesson 13: A13.1, A13.2, Appendix Lesson 3: A3.2, AL3R1</p> <p>Earth Science 2 – What Makes the Weather Change? Lesson 4: A4.3</p>

<p>Earth's Systems 8. Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials (e.g., processes of crystallization, heating and cooling, weathering, deformation, and sedimentation).</p>	<p>Earth Science 3 – How Is the Earth Changing? Lesson 1: A1.1, A1.2, L1R1, A1.3, Lesson 5: A5.1, L5R1, Lesson 6: A6.1, A6.2, L6R1, Lesson 9: A9.3, Lesson 10: A10.1, L10R1, A10.2, A10.3</p>
<p>Earth's Systems 9. Use models to explain how the flow of Earth's internal energy drives a cycling of matter between Earth's surface and deep interior causing plate movements (e.g., mid-ocean ridges, ocean trenches, volcanoes, earthquakes, mountains, rift valleys, volcanic islands).</p>	<p>Earth Science 3 – How Is the Earth Changing? Lesson 2: A2.2, Lesson 3: A3.1, Lesson 7: A7.1, Lesson 9: A9.1, L9R1, Lesson 10: A10.1, L10R1, A10.2, A10.3</p>
<p>Earth's Systems 10. Use research-based evidence to propose a scientific explanation regarding how the distribution of Earth's resources such as minerals, fossil fuels, and groundwater are the result of ongoing geoscience processes (e.g., past volcanic and hydrothermal activity, burial of organic sediments, active weathering of rock).</p>	<p>Earth Science 1 – How Does Water Shape Our World? Lesson 3: A3.3, L3R2, Appendix Lesson 1: A1.1</p>
<p>Earth's Systems 11. Develop and use models of Earth's interior composition to illustrate the resulting magnetic field (e.g., magnetic poles) and to explain its measurable effects (e.g., protection from cosmic radiation).</p>	<p>Earth Science 1 – How Does Water Shape Our World? Lesson 11: A11.1, A11.2, L11R1, A11.3, Lesson 12: A12.1, L12R1, A12.2, L12R2, Appendix Lesson 1: L1R1</p> <p>Earth Science 2 – What Makes the Weather Change? Appendix Lesson 1: A1.1, A1.2, Lesson 2: A2.1,</p> <p>Earth Science 3 – How Is the Earth Changing? Lesson 2: A2.2, Lesson 4: A4.1, A4.2, L4R1, Lesson 5: A5.2, Lesson 6: A6.1, Lesson 8: A8.1, L8R1, Lesson 9: A9.3, Lesson 10: A10.3</p>
<p>Earth's Systems 12. Integrate qualitative scientific and technical information (e.g., weather maps; diagrams; other visualizations, including radar and computer simulations) to support the claim that motions and complex interactions of air masses result in changes in weather conditions. a. Use various instruments (e.g., thermometers, barometers, anemometers, wet bulbs) to monitor local weather and examine weather patterns to predict various weather events, especially the impact of severe weather (e.g., fronts, hurricanes, tornados, blizzards, ice storms, droughts).</p>	<p>Earth Science 1 – How Does Water Shape Our World? Lesson 3: A3.2, L3R1</p> <p>Earth Science 2 – What Makes the Weather Change? Lesson 1: A1.2, L1R1, Lesson 2: A2.1, Lesson 4: A4.1, A4.2, Lesson 5: A5.1, L5R1, A5.2, Lesson 6: A6.1, A6.2, L6R1</p>
<p>Earth's Systems 13. Use models (e.g., diagrams, maps, globes, digital representations) to explain how the rotation of Earth and unequal heating of its surface create patterns of atmospheric and oceanic circulation that determine regional climates. a. Use experiments to investigate how energy from the sun is distributed between Earth's surface and its atmosphere by convection and radiation (e.g., warmer water in a pan rising as cooler water sinks, warming one's hands by a campfire).</p>	<p>Earth Science 2 – What Makes the Weather Change? Lesson 1: A1.1, Lesson 3: A3.3, L3R1, Lesson 4: L4R1, Lesson 7: A7.1, A7.2, A7.5, Lesson 8: A8.1, A8.2, L8R1</p>
<p>Earth's Systems 14. Analyze and interpret data (e.g., tables, graphs, maps of global and regional temperatures; atmospheric levels of gases such as carbon dioxide and methane; rates of human activities) to describe how various human activities (e.g., use of fossil fuels, creation of urban heat islands,</p>	<p>Earth Science 2 - What Makes the Weather Change? Appendix Lesson 1: A1.1, A1.2</p>

<p>agricultural practices) and natural processes (e.g., solar radiation, greenhouse effect, volcanic activity) may cause changes in local and global temperatures over time.</p>	
<p>Earth and Human Activity 15. Analyze evidence (e.g., databases on human populations, rates of consumption of food and other natural resources) to explain how changes in human population, per capita consumption of natural resources, and other human activities (e.g., land use, resource development, water and air pollution, urbanization) affect Earth's systems.</p>	<p>Earth Science 1 – How Does Water Shape Our World? Appendix Lesson 2: A2.1</p> <p>Earth Science 3 – How is the Earth Changing? Lesson 8: L8R1</p>
<p>Earth and Human Activity 16. Implement scientific principles to design processes for monitoring and minimizing human impact on the environment (e.g., water usage, including withdrawal of water from streams and aquifers or construction of dams and levees; land usage, including urban development, agriculture, or removal of wetlands; pollution of air, water, and land).*</p>	<p>Earth Science 1 – How Does Water Shape Our World? Appendix Lesson 3: A3.2, AL3R1</p> <p>Earth Science 3 – How is the Earth Changing? Lesson 1: A1.1, A1.2, L1R1, Lesson 6: A6.2, L6R1, Lesson 9: L9R2, Appendix Lesson 1: A1.1, AL1R1</p>