

## Current Policy

### Title 28 EDUCATION

#### Part XI. Accountability/Testing

#### Subpart 5. Bulletin 127—LEAP Connect Assessment, Louisiana Connectors for Students with Significant Cognitive Disabilities

### Chapter 97. Science

#### Subchapter A. General

##### §9701. Definitions

[Formerly LAC 28:CXLL.701]

*Celestial*—of or related to the sky or universe, as the planets and stars.

*Communicable Disease*—disease that is transmittable between persons or species; contagious disease.

*Data*—numerical or descriptive, factual information, especially that which is derived from scientific observations or experiments, organized for analysis.

*Habitat*—specific environment or part of an ecosystem where an organism lives (e.g., woods, desert).

*Hypothesis*—

1. a rational explanation of a single event or phenomenon based upon what has been observed but not proven;
2. a tentative explanation for the cause of an observed phenomenon.

*Inference*—process of drawing a conclusion or making a logical judgment based on prior conclusions or evidence but without direct observation.

*Inquiry*—systematic process of using knowledge and skills to acquire and/or apply new knowledge and skills.

*Metric System Units of Measurement*—decimal system of weights and measurements that includes units of Standard International or SI units measurement

*Model*—simulation of a real object that has explanatory power but that typically differs in size, scale, and/or detail; examples include plan, scheme, structure, or mathematical equation.

*Pollution*—the contamination of soil, water, or the atmosphere by harmful substances.

*Revolution*—the motion of a body or object around another body or object, for example, the revolution of Earth around the Sun.

*Rotation*—the spinning of a planet such as Earth or other object on its axis.

*Standard International (SI) Units of Measurement*—more complete, coherent version of the metric system of International measurement; basic units of the SI system include the centimeter or meter, gram or kilogram, and second.

*Standard Tools*—instruments such as meter sticks, pan balances, graduated cylinders, or thermometers used for systematic measurement.

*Testable Question*—a query that can be answered through experimentation or research.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2378 (November 2008).

##### §9703. General Development Principles

[Formerly LAC 28:CXLL.703]

A. Unlike English language arts and mathematics, the science extended standards are based on the science benchmarks and not the GLEs. This is done to be consistent with the design of the LEAP, GEE, and LAA 2 assessments for science. While the content described by the GLEs represents core content to be mastered by the end of a given grade, the benchmarks represent broader curriculum goals, applicable to grade spans that are to be mastered by the end of the grade span. Science content can be added and enriched as appropriate for a district program, school, or student. For mastery to be attained, most content must be introduced earlier than the grade identified for mastery. Once a particular skill has been identified as an extended standard, the skill should be reinforced in subsequent years, but may not be repeated in the list of expectations for subsequent years.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2378 (November 2008).

##### §9705. Elementary School—Prekindergarten-Grade Four

[Formerly LAC 28:CXLL.705]

A. Students at the prekindergarten (PreK) through grade 4 levels, including students with significant cognitive disabilities, are learning to observe by using their senses, describing properties of substances, recognizing appropriate terminology, and comparing, sorting, classifying, and learning about the natural world. Science activities and investigations can be used to engage students in a variety of inquiry activities, such as questioning, observing, measuring, calculating, graphing, and communicating that are the essence of science. These skills and concepts are taught through the five strands of science:

1. science as inquiry;
2. physical science;
3. life science;
4. earth and space science; and
5. science and the environment.

Grade	Focus Area
PreK	All Strands
K	All Strands
1	All Strands
2	All Strands
3	All Strands
4	All Strands

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2378 (November 2008).

**§9707. Middle School—Grades Five-Eight**  
**[Formerly LAC 28:CXLI.707]**

A. Students in middle school continue to expand their knowledge and understanding of general science, including science inquiry, physical science, life science, Earth and space science, and the environment as discrete or integrated studies.

B. To develop a deeper understanding of concepts, science content focus areas have been identified for grades 5-8. They are listed in Table 4.

Grade	Focus Area
5	General Science (All Strands)
6	Physical Science
7	Life Science
8	Earth and Space Science

C. In addition to the designated focus areas, the science as inquiry (SI) and science and the environment (SE) strands are integrated into each of the middle school grades. Other content may be integrated locally within school districts. While focus areas are stressed at different grades, the extended standards for grade 8 focus on integrated science, which is reinforced by more focused curriculum in grades 6–8.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2378 (November 2008).

**§9709. High School—Grades Nine-Twelve**  
**[Formerly LAC 28:CXLI.709]**

A. In high school, science instruction becomes more specialized and there are GLEs for six science courses, one each at ninth- and tenth-grade levels and four for the eleventh- and twelfth-grade levels, with the following recommendations in mind (see Table 5).

Strand	Course(s)	Recommended Grades
Physical Science	Physical Science	9
	Chemistry I	11–12
	Physics I	11–12
Life Science	Biology I	10
Earth and Space Science	Earth Science	11–12
Science and the Environment	Environmental Science	11–12

B. Personal preference and district course offerings affect which courses are taken and may determine the order in which courses are taken.

C. The grade 11 extended standards focus on science as inquiry, physical science, and life science. This is consistent with developing state high school assessment practices in Louisiana and reflects the content of the typical high school science courses completed by students by the time they reach the eleventh grade.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2379 (November 2008).

## **Subchapter B. Standards/ Benchmarks/Extended Standards**

**§9719. Overview**  
**[Formerly LAC 28:CXLI.719]**

A. The science Extended Standards (ESs) align with the *Louisiana Science Framework* (1997). The science ESs address benchmarks from all five content strands for grades 4 and 8 and three content strands for grade 11 as outlined in the framework document.

B. The five Louisiana science content standards are broad goals for what all students in Louisiana should know and be able to do in science. In the *Louisiana Science Framework*, standards are based on the five science strands. That is, each standard represents one of the five strands. The strands and their respective abbreviated codes are science as inquiry (SI), physical science (PS), life science (LS), earth and space science (ESS), and science and the environment (SE). There is one process strand, science as inquiry, and four content strands. This organization into strands does not imply that science must be taught in separate isolated units. In fact, teachers are encouraged to teach integrated, interdisciplinary units of study.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2379 (November 2008).

**§9721. Benchmark Codes**  
**[Formerly LAC 28:CXLI.721]**

A. The first term in the benchmark code refers to the strand (i.e., SI, PS, LS, ESS, SE). The second term refers to the grade cluster (i.e., E for elementary, M for middle school, H for high school). The third term refers to the category and benchmark number (e.g., A1, B2, C3).

B. For most grade clusters, strands are divided into categories or major topical areas. (The SE strand has no category at the PreK-4 and 5-8 grade levels.) Science GLEs have been developed and are organized based on this secondary breakdown. Categories are indicated by the letters in the benchmark code designations. (See Table 6.)

<b>Code(s)</b>	<b>Explanation</b>
SI-E-A5	SI Strand, Elementary Level, Category A, Benchmark 5
PS-M-B4	PS Strand, Middle School Level, Category B, Benchmark 4
SE-H-A6 LS-H-D1	SE Strand, High School Level, Category A, Benchmark 6 and LS Strand, High School Level, Category D, Benchmark 1

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2379 (November 2008).

**§9723. Extended Standard Numbering**  
**[Formerly LAC 28:CXLI.723]**

A. ES indicates an extended standard, which is a further delineation of the benchmark. The second term refers to the specific category and benchmark that is extended. Extended standards numbering relates to each benchmark. (Refer to the following Sample and Key)

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2379 (November 2008).

**§9725. Complexity Levels**  
**[Formerly LAC 28:CXLI.725]**

A. Three complexity levels (CLs) are described for each extended standard. CLs are coded from three (most complex) to one (least complex). CLs provide students of varying abilities instructional access to grade level academic content. Mastery of an extended standard is generally indicated by a student performing at level 3.

<b>Sample Page and Key for Science</b>		
<b>Science as Inquiry: The students will do science by engaging in partial and full inquiries that are within their developmental capabilities.</b>		
<b>Benchmarks</b>	<b>Extended Standards</b>	<b>Complexity Levels</b>
A. The Abilities Necessary to Do Scientific Inquiry		
SI-E-A1: asking appropriate questions about organisms and events in the environment	ES-A1: Ask appropriate questions about organisms and events in the environment	3. Develop appropriate questions based on an organism or events in the environment 2. Select an appropriate question related to a single organism or event 1. Recognize part of an organism or event that is inconsistent with a group
SI-E-A3: communicating that observations are made with one's senses	ES-A3: Use the five senses to make observations	3. Use appropriate sensory descriptions (i.e., see, hear, taste, touch, smell) to communicate about an observation during a simple scientific investigation 2. Select an appropriate sensory organ to be used for observations during a simple scientific investigation 1. Match sensory descriptions or pictures with the correct sensory organ

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2379 (November 2008).

**§9727. Science as Inquiry**  
**[Formerly LAC 28:CXLI.727]**

A. The Science as Inquiry (SI) standard states: *The students will do science by engaging in partial and full inquiries that are within their developmental capabilities.* The benchmarks for the SI strand of the science framework are to be embedded in all science courses at every grade level and cannot be considered in isolation from the other strands. The processes and skills in the SI strand are to be integrated with the science content of the other four strands.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2380 (November 2008).

**§9729. Conclusion**  
**[Formerly LAC 28:CXLI.729]**

A. Each of the following benchmark and extended standard listings by grade opens with a summary describing the cumulative emphasis of the curriculum preceding and including that grade. These emphases serve to shape and mold the program for that individual grade level, and also indicate how students should be prepared during prior grades.

B. Extended standards are the product of careful considerations by content specialists and special education teachers to ensure that this content is appropriate for students with significant cognitive disabilities and is the essence of the standard and benchmark. Complexity levels provide students of varying abilities instructional access to grade level academic content.

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2380 (November 2008).

**§9731. Fourth Grade**

**[Formerly LAC 28:CXLI.731]**

A. Focus. Fourth-grade students, including those with significant cognitive disabilities, evaluate the results of simple scientific investigations and organize information through classification. Students identify and ask questions that are the basis of scientific experimentation and make observations using their senses. They recognize or use common tools safely to accomplish these investigations. While observing their surroundings and their interactions with the world around them, they begin to make basic classifications of matter using physical properties and recognize that common everyday products are made from natural resources. Through these observations and investigations they recognize the connections between life and the physical environment and how conditions can change over time. For example, in the LS strand, students with significant cognitive disabilities match a common animal to its habitat type.

B. Strands

1. Science as Inquiry. The students will do science by engaging in partial and full inquiries that are within their developmental capabilities.

Grade 4 Science		
Benchmarks	Extended Standards	Complexity Levels
A. The Abilities Necessary to Do Scientific Inquiry		
SI-E-A1: asking appropriate questions about organisms and events in the environment	ES-A1: Ask appropriate questions about organisms and events in the environment	3. Develop appropriate questions based on an organism or events in the environment 2. Select an appropriate question related to a single organism or event 1. Recognize part of an organism or event that is inconsistent with a group
SI-E-A3: communicating that observations are made with one's senses	ES-A3: Use the five senses to make observations	3. Use appropriate sensory descriptions (i.e., see, hear, taste, touch, smell) to communicate about an observation during a simple scientific investigation 2. Select an appropriate sensory organ to be used for observations during a simple scientific investigation 1. Match descriptions or pictures with the correct sensory organ
SI-E-A4: employing equipment and tools to gather data and extend the sensory observations	ES-A4: Use appropriate tools (i.e., thermometer, scale, magnifying tool, measuring cup, ruler) to extend sensory observations	3. Use an appropriate tool to extend a sensory observation 2. Recognize the correct tool to use to extend a sensory observation 1. Recognize a tool
SI-E-A7: utilizing safety procedures during experiments	ES-A7: Identify or use appropriate safety equipment as needed or directed	3. Identify appropriate safety equipment needed in a specific event 2. Recognize the correct use of safety equipment 1. Recognize safety equipment

2. Physical Science. Students will develop an understanding of the characteristics and interrelationships of matter and energy in the physical world.

Grade 4 Science		
Benchmarks	Extended Standards	Complexity Levels
A. Properties of Objects and Materials		
PS-E-A1: observing, describing and classifying objects by properties (size, weight, shape, color, texture, and temperature)	ES-A1: Classify objects based on properties (i.e., size, weight, shape, color)	3. Identify a characteristic for sorting a set of objects 2. Sort objects based on a single characteristic 1. Recognize an object that has characteristics that are different from the group
PS-E-A3: observing and describing the objects by the properties of the materials from which they are made (paper, wood, metal)	ES-A3: Classify objects based on the materials from which they are made (i.e., paper, wood, metal)	3. Identify a material for sorting a set of objects 2. Sort objects based on a single material 1. Recognize an object that is made from a material that is different from the group
PS-E-A4: describing the properties of the different states of matter and identifying the conditions that cause matter to change states	ES-A4: Classify objects based on the different states of matter (i.e., solid, liquid, gas)	3. Identify a state of matter for sorting a set of objects 2. Sort objects based on a single state of matter 1. Recognize an object that is in a state of matter that is different from the group
B. Position and Motion of Objects		
PS-E-B2: exploring and recognizing that the position and motion of objects can be changed by pushing or pulling (force) over time	ES-B2: Change the position of objects using push or pull	3. Select "push" or "pull" to move an object to a specific location 2. Follow directions using "push" or "pull" to move objects 1. Imitate pushing or pulling an object
C. Forms of Energy		
PS-E-C7: exploring and describing the uses of energy at school, home, and play	ES-C7: Recognize common uses of energy (e.g., heating, lighting, transportation, communications) used at school, home, or play	3. Identify uses of energy in different settings (i.e., school, home, play) 2. Sort activities by common uses of energy 1. Recognize a use of energy

3. Life Science. The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.

Grade 4 Science		
Benchmarks	Extended Standards	Complexity Levels
A. Characteristics of Organisms		
LS-E-A1: identifying the needs of plants and animals based on age-appropriate recorded observations	ES-A1: Identify the basic needs (i.e., food, air, water, shelter) of plants and animals	3. Select basic needs that are common to both plants and animals 2. Select more than one basic need of plants or animals 1. Select a basic need of plants or animals
LS-E-A3: locating and comparing major plant and animal structures and their functions	ES-A3: Identify basic structures and their functions in common plants (i.e., flowers, leaves, stems, roots)	3. Match plant parts to their functions 2. Identify the same plant part on different plants 1. Recognize a plant part
LS-E-A5: locating major human body organs and describing their functions	ES-A5: Identify basic structures and their functions of the human skeletal system	3. Match parts of the skeletal system to their functions 2. Match parts of the skeletal system to their location in the human body 1. Recognize a part of the human skeletal system
B. Life Cycles of Organisms		
LS-E-B1: observing and describing the life cycles of some plants and animals	ES-B1: Understand the life cycle of a bean plant	3. Sequence the stages of the life cycle of a bean plant 2. Recognize the correct sequence of the life cycle of a bean plant 1. Recognize a part of the life cycle of a bean plant
LS-E-B4: observing, recording, and graphing student growth over time using a variety of quantitative measures (height, weight, linear measure of feet and hands, etc.)	ES-B4: Describe students growth (i.e., height, weight) over time	3. Identify a typical human growth chart for the period from birth to adulthood 2. Recognize the general relationship between human growth and age 1. Recognize that persons of the same age grow at different rates
C. Organisms and Their Environments		
LS-E-C1: examining the habitats of plants and animals and determining how basic needs are met within each habitat	ES-C1: Match common animals to their habitat type (i.e., water, land)	3. Match common animals to different habitat types 2. Match more than one common animal to a habitat type 1. Match a common animal to a habitat type

4. Earth and Space Science. The students will develop an understanding of the properties of earth materials, the structure of earth's system, Earth's history, and earth's place in the universe.

Grade 4 Science		
Benchmarks	Extended Standards	Complexity Levels
A. Properties of Earth Materials		
ESS-E-A4: investigating, observing, measuring and describing changes in daily weather patterns and phenomena	ES-A4: Identify basic weather conditions and identify appropriate clothing for specific weather conditions	3. Select appropriate clothing for a change in weather conditions 2. Sort appropriate clothing by basic weather conditions 1. Recognize a change in basic weather conditions
B. Objects in the Sky		
ESS-E-B4: modeling changes that occur because of the rotation of the Earth (alternation of night and day) and the revolution of the Earth around the Sun	ES-B4: Identify differences between times of day, day/night, and seasons of the year	3. Identify differences in representations of spring, summer, fall, and winter 2. Sequence representations of morning, noon, and night 1. Select representations of day time and night time

5. Science and the Environment. In learning environmental science, students will develop an appreciation of the natural environment, learn the importance of environmental quality, and acquire a sense of stewardship. As consumers and citizens, they will be able to recognize how our personal, professional, and political actions affect the natural world.

Grade 4 Science		
Benchmarks	Extended Standards	Complexity Levels
SE-E-A4: understanding that the original sources of all material goods are natural resources and that the conserving and recycling of natural resources is a form of stewardship	ES-A4: Identify natural resources that are the original source of common products (i.e., paper, pencils, bricks, cotton cloth)	3. Match more than one human-made item with the natural resource from which they were made 2. Sort human-made items by the natural resources from which they are made 1. Recognize common items that are human-made among natural resources

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2380 (October 2008).

### §9733. Eighth Grade

#### [Formerly LAC 28:CXLI.733]

A. Focus. The focus at the eighth-grade level is integrated science, building on the foundation developed during earlier grades. Physical (PS) and life (LS) sciences are again the focus with expanded studies in Earth and space science (ESS) concepts. Students develop additional inquiry skills through observations and investigations designed to expand comprehension of earth and space, as well as related physical and environmental science topics. Earth and space science topics include exploring varying weather conditions and earth's place in the solar system. Students with significant cognitive disabilities access much of the same information and work on many skills through the complexity levels.

#### B. Strands

1. Science as Inquiry. The students will do science by engaging in partial and full inquiries that are within their developmental capabilities.

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
A. The Abilities Necessary to Do Scientific Inquiry		
SI-M-A2: designing and conducting a scientific investigation	ES-A2: Identify a process to solve a science problem	3. Select two or more steps in proper sequence to solve a science problem 2. Select two or more steps to solve a science problem 1. Recognize a step that helps solve a simple science problem

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
SI-M-A3: using mathematics and appropriate tools and techniques to gather, analyze, and interpret data	ES-A3: Identify significant differences in length, weight, and temperature using appropriate tools	3. Recognize the highest or lowest example of varying conditions (hot-cold, long-short, heavy-light) by using a measurement tool 2. Match correctly recorded measurements of length, weight, and/or temperature 1. Recognize appropriate measurement tools
SI-M-A4: developing descriptions, explanations, and graphs using data	ES-A4: Interpret simple situations using data	3. Identify a simple graph that represents a specific situation 2. Select a description supported by data 1. Recognize significant differences in data
SI-M-A5: developing models and predictions using the relationships between data and explanations	ES-A5: Predict patterns based on a given set of data	3. Sequence the steps of a pattern based on a scenario 2. Complete the next step in a pattern 1. Match similar patterns in a given dataset
SI-M-A8: utilizing safety procedures during scientific investigations	ES-A8: Perform common science tasks safely	3. Identify hazardous situations in a simulation 2. Select appropriate ways to complete science tasks safely 1. Recognize a safety procedure
<b>B. Understanding Scientific Inquiry</b>		
SI-M-B7: understanding that scientific development/ technology is driven by societal needs and funding	ES-B7: Use technology for daily living tasks	3. Match appropriate technology to common tasks 2. Recognize the appropriate use of technology 1. Recognize technology

2. Physical Science. Students will develop an understanding of the characteristics and interrelationship of matter and energy in the physical world.

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
<b>A. Properties and Changes of Properties in Matter</b>		
PS-M-A5: investigating the relationships among temperature, molecular motion, phase changes, and physical properties of matter	ES-A5: Identify how changes in temperature can effect the state of water (i.e., solid, liquid, gas)	3. Describe how the state of water changes under varying temperature conditions 2. Match water in solid, liquid, and gaseous states to different temperature conditions 1. Recognize that water has three states
<b>B. Motions and Force</b>		
PS-M-B5: understanding that unbalanced forces will cause changes in the speed or direction of an object's motion	ES-B5: Identify how to change the speed or direction of a moving or stationary object	3. Match different actions to corresponding changes in the motion of objects 2. Select an action that results in an increase in speed or change in direction of a moving object 1. Identify ways to stop or slow the motion of objects
<b>C. Transformations of Energy</b>		
PS-M-C5: investigating and describing the movement of heat and the effects of heat in objects and systems	ES-C5: Recognize that heat moves in different ways	3. Identify changes in an object's temperature as it is subjected to different temperatures 2. Recognize that heat can transfer from one object to another 1. Sort objects that are being heated or cooled

3. Life Science. The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
<b>A. Structure and Function in Living Systems</b>		
LS-M-A5: locating major human body organs and describing their functions	ES-A5: Identify basic structures (i.e., mouth, esophagus, stomach, intestines) and functions of the human digestive system	3. Sequence how food travels from one organ to another in the human digestive system 2. Locate where basic organs in the digestive system are found in the human body 1. Recognize a basic organ in the human digestive system
LS-M-A6: describing how the human body changes with age and listing factors that affect the length and quality of life	ES-A6: Identify various stages in the human life span (e.g., baby, child, teenager, adult)	3. Recognize individuals based on features that identify them as being in a specific stage of their life span (e.g., baby, child, teenager, or adult) 2. Recognize a correct sequence of stages in the human life span (i.e., baby, child, teenager, adult) 1. Sort individuals according to life-span stages
LS-M-A7: describing communicable and noncommunicable diseases	ES-A7: Identify and implement procedures to prevent common disease/germ transmission	3. Identify different ways to prevent disease transmission 2. Identify that germs may be transmitted directly (person to person) or indirectly (person to an object and then from that object to another person) 1. Recognize that common diseases are caused by germs
<b>B. Reproduction and Heredity</b>		
LS-M-B3: describing how heredity allows parents to pass certain traits to offspring	ES-B3: Recognize that offspring resemble their parents and parents' species	3. Identify familiar human traits that children and their parents may have in common (e.g., hair color, eye color, height) 2. Sort animals by common traits 1. Recognize an animal that has characteristics that differ from a group of the same kind of animal
<b>C. Populations and Ecosystems</b>		
LS-M-C3: investigating major ecosystems and recognizing physical properties and organisms within each	ES-C3: Recognize that different types of familiar animals are suited to different habitats (i.e., ocean, lake/river, forest, grassland, desert)	3. Identify examples of several animals that live in the same habitat (e.g., whales, sharks, and sea turtles live in the ocean) 2. Match familiar animals to their appropriate habitats 1. Recognize that different types of animals live in different types of places
<b>D. Adaptations of Organisms</b>		
LS-M-D1: describing the importance of plant and animal adaptation, including local examples	ES-D1: Identify adaptations that help plants or animals live in Louisiana	3. Identify an adaptation that helps a plant or animal live in a specific Louisiana habitat 2. Match adaptation (e.g., method of movement) to habitats 1. Recognize that animals have different physical adaptations (e.g., animals move in different ways using different body parts—wings, fins, bellies, legs)

4. Earth and Space Science. The students will develop an understanding of the properties of earth materials, the structure of the earth system, the earth's history, and the earth's place in the universe.

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
A. Structure of Earth		
ESS-M-A12: predicting weather patterns through use of a weather map	ES-A12: Use basic weather symbols on maps or charts to demonstrate weather predictions	3. Modify an activity based on a changing sequence of weather symbols 2. Match weather symbols to descriptions of different weather conditions 1. Recognize that symbols are used to represent different weather conditions
C. Earth in the Solar System		
ESS-M-C2: comparing and contrasting the celestial bodies in our solar system	ES-C2: Identify basic parts of our solar system (i.e., Earth, Moon, Sun)	3. Identify basic characteristics of Earth, the Moon, and the Sun 2. Recognize that there are differences between Earth, the Moon, and the Sun 1. Recognize representations of Earth, the Moon, and the Sun

5. Science and the Environment. In learning environmental science, students will develop an appreciation of the natural environment, learn the importance of environmental quality, and acquire a sense of stewardship. As consumers and citizens, they will be able to recognize how our personal, professional, and political actions affect the natural world.

Grade 8 Science		
Benchmarks	Extended Standards	Complexity Levels
SE-M-A3: defining the concept of pollutant and describing the effects of various pollutants on ecosystems	ES-A3: Identify air and water pollutants and how they harm the environment in different ways	3. Recognize the cause of a polluted area (i.e., air, water) 2. Sort polluted and unpolluted areas (i.e., air, water) 1. Recognize a polluted area (i.e., air, water)

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2382 (November 2008).

### §9735. Eleventh Grade

[Formerly LAC 28:CXLL.735]

A. Focus. The focus in high school is physical science and life science reflecting the key science courses taken by most high school students by eleventh grade. Again, the foundations covered during earlier grades related to the properties of matter, forces and motion, and interactions of energy and matter are addressed using more complex situations. In life science, the focus is on basic understandings related to heredity, food chains, and more complex biological systems compared to those explored during earlier grades. A key life science emphasis is on personal and community health and safety. Science inquiry continues to be the foundational mechanism used to integrate the science curriculum with a focus on scientific investigations, use of data, and the role technology can play in expanding human observations. Students with significant cognitive disabilities access much of the same information and work on many skills through the complexity levels.

#### B. Strands

1. Science as Inquiry. The students will do science by engaging in partial and full inquiries that are within their developmental capabilities.

Grade 11 Science		
Benchmarks	Extended Standards	Complexity Levels
A. The Abilities Necessary to Do Scientific Inquiry		
SI-H-A2: designing and conducting scientific investigations	ES-A2: Identify an appropriate process to complete a scientific investigation	3. Identify more than one procedure necessary to complete a given scientific investigation 2. Match a procedure with an appropriate scientific investigation 1. Recognize a scientific procedure
SI-H-A3: using technology and mathematics to improve investigations and communications	ES-A3: Interpret situations using data	3. Make an appropriate selection based on data 2. Compare situations using data 1. Match data to a specific situation
SI-H-A7: utilizing science safety procedures during scientific investigations	ES-A7: Perform simple multi-step scientific processes safely	3. Identify that performing processes in their proper order affects safety 2. Select safe ways to complete steps in a simple scientific investigation 1. Recognize safety procedures
B. Understanding Scientific Inquiry		
SI-H-B3: communicating that scientists rely on technology to enhance the gathering and manipulation of data	ES-B3: Identify how scientists use technology to improve information gathering	3. Identify how technology can improve information gathering 2. Sort technology by the kind of information that it can improve 1. Match a scientist to the kind of technology he/she uses (e.g., doctor—stethoscope)

2. Physical Science. Students will develop an understanding of the characteristics and interrelationship of matter and energy in the physical world.

Grade 11 Science		
Benchmarks	Extended Standards	Complexity Levels
C. The Structure and Properties of Matter		
PS-H-C1: distinguishing among elements, compounds, and/or mixtures	ES-C1: Identify that there are substances that can be put together and can't be returned to their original parts (compounds), while there are other substances that can be put together and returned to their original parts (mixtures)	3. Identify the difference between mixtures and compounds 2. Sort substances as mixtures or compounds 1. Recognize that some common substances are composed of different substances

Grade 11 Science		
Benchmarks	Extended Standards	Complexity Levels
PS-H-C4: separating mixtures based upon the physical properties of their components	ES-C4: Separate mixtures by using common physical properties of matter (i.e., magnetism, density, color, shape, size)	3. Identify how objects in a given mixture having similar properties of color, shape, and size can be easily separated by using their magnetic properties or relative densities (sink or float in water) 2. Sort objects in a mixture based on color, shape, or size 1. Recognize that an object can have different physical properties compared to a group of similar objects
E. Forces and Motion		
PS-H-E1: recognizing the characteristics and relative strengths of the forces of nature (gravitational, electrical, magnetic, nuclear)	ES-E1: Identify the impact of different forces in everyday situations (i.e., gravity, magnetic, friction)	3. Match how the motion of an object on a level surface changes as the surface texture varies due to the use of different common surface materials 2. Match how the motion of an object on a smooth incline changes as the angle of incline increases, decreases, or changes direction 1. Recognize two different ways that a magnet may move when another magnet is moved towards it
G. Interactions of Energy and Matter		
PS-H-G4: explaining the possible hazards of exposure to various forms and amounts of energy	ES-G4: Identify the presence of hazards from the exposure to or use of energy (i.e., light, heat, electrical)	3. Identify the presence of hazardous situations involving different uses of energy 2. Sort hazardous and non-hazardous exposures to heat, light, or electricity 1. Recognize that in certain circumstances light, heat, and electricity can be hazardous

3. Life Science. The students will become aware of the characteristics and life cycles of organisms and understand their relationships to each other and to their environment.

Grade 11 Science		
Benchmarks	Extended Standards	Complexity Levels
C. Biological Evolution		
LS-H-C6: comparing and contrasting life cycles of organisms	ES-C6: Compare the life cycles of common organisms (i.e., frogs, humans, other mammals)	3. Compare the life cycles of a frog and a given mammal 2. Compare the life cycles of a human and a given mammal 1. Recognize the life cycles of different common organisms
D. Interdependence of Organisms		
LS-H-D2: describing trophic levels and energy flows	ES-D2: Identify a basic food chain	3. Assemble a basic food chain 2. Recognize basic food chains 1. Recognize what different common animals eat
F. Systems and the Behavior of Organisms		
LS-H-F1: identifying the structure and functions of organ systems.	ES-F1: Identify basic structures and functions of the human circulatory system (e.g., heart, blood vessels, blood)	3. Identify structural relationships between the parts of the circulatory system and the functions of each part 2. Identify where parts of the circulatory system are located in the human body 1. Recognize parts of the human circulatory system
G. Personal and Community Health		
LS-H-G1: relating fitness and health to longevity	ES-G1: Identify how fitness activities improve health	3. Identify how fitness activities improve one's health 2. Match a fitness activity to a health improvement 1. Recognize fitness activities
LS-H-G3: explaining the role of the immune system in fighting disease	ES-G3: Identify that healthy human body systems assist the body in fighting diseases	3. Compare different healthy and unhealthy activities/diets to a person's susceptibility to becoming ill 2. Sort healthy and unhealthy activities and diets 1. Recognize that certain actions help the body, while others harm the body
LS-H-G4: exploring current research on the major diseases with regard to cause, symptoms, treatment, prevention, and cure	ES-G4: Identify physical conditions that may signal illness	3. Identify early warning symptoms of common illnesses that signal the need to get help 2. Match symptoms to common illnesses 1. Recognize that the body changes during an illness

AUTHORITY NOTE: Promulgated in accordance with R.S. 17:24.4.

HISTORICAL NOTE: Promulgated by the Board of Elementary and Secondary Education, LR 34:2384 (November 2008).