State of Iowa
DLM Science 2017-2018 Blueprint

In this document, "blueprint" refers to the range of Essential Elements (EEs) that will be assessed during. The Science EEs are arranged into the three domains, ten core ideas, and fourteen topics shown in the table below.

The DLM Science Assessment is a year-end spring assessment. Students in grades 5, 8, & 11 participate in the DLM Science Assessment. During the Science Spring assessment, teachers do not record EEs or create instructional plans in DLM KITE Educator Portal. The DLM System automatically delivers testlets nine (9) testlets for each grade level.

Teachers are expected to provide year-long science instruction on the required number of EEs in advance to the assessment. Any student not assessed on the required EEs will be considered an exclusion unless granted exception by the Iowa Department of Education. IEP teams must request this exception from the Iowa Department of Education by contacting jennifer.denne@iowa.gov

Domains, Core Ideas, and Topics in Science

Domain	Core Idea	Topic
Physical	PS1: Matter and Its Interactions	PS1.A: Structure and Properties of Matter
	PS2: Motion and Stability: Forces and Interactions	PS2.A: Forces and Motion
		PS2.B: Types of Interactions
	PS3: Energy	PS3.B: Conservation of Energy and Energy Transfer
		PS3.D: Energy in Chemical Processes and Everyday Life
Life	LS1: From Molecules to Organisms: Structure and Processes	LS1.A: Structure and Function
		LS1.B: Growth and Development of Organisms
		LS1.C: Organization for Matter and Energy Flow in Organisms
	LS2: Ecosystems: Interactions, Energy, and Dynamics	LS2.A: Interdependent Relationships in Ecosystems
	LS3: Heredity: Inheritance and Variation of Traits	LS3.B: Variation of Traits
	LS4: Biological Evolution: Unity and Diversity	LS4.C: Adaptation
Earth and Science	ESS1: Earth's Place in the Universe	ESS1.B: Earth and the Solar System
	ESS2: Earth's System	ESS2.A: Earth Materials and Systems
		ESS2.D: Weather and Climate
	ESS3: Earth and Human Activity	ESS3.A: Natural Resources
		ESS3.D: Human Impacts on Earth Systems

Coverage of the conceptual areas is summarized for each grade span in the table below

Number of Essential Elements per topic assessed in each grade span by domain

Grade	Physical Science Topics					Total
	PS1.A	PS2.A	PS2.B	PS3.B	PS3.D	
5th	2		1		1	4
8th	1	1		1		3
11th	1	1		1		3

Grade	Life Science Topics						Total
	LS1.A	LS1.B	LS1.C	LS2.A	LS3.B	LS4.C	
5th			1	1			2
8th	1	1		1			3
11th	1			1		1	3

Grade	Earth and Space Science Topics					Total
	ESS1.B	ESS2.A	ESS2.D	ESS3.A	ESS3.C	
5th	1	1			1	3
8th		1	1		1	3
11th	1			1	1	3

In the pages that follow, the specific EEs assessed in each grade span are listed in tables.

Grade 5: Essential Elements Assessed

Topic	EE	Description	Instructional Date Assessed	Spring Date Assessed
			11/13-2/27	3/12-5/18
PS1.A				
	EE.5-PS1-2	Measure and compare weights of substances before and after heating, cooling, or mixing substances to show that weight of matter is conserved.		
	EE.5-PS1-3	Make observations and measurements to identify materials based on their properties (e.g., weight, shape, texture, buoyancy, color, or magnetism).		
PS2.B				
	EE.5-PS2-1	Demonstrate that the gravitational force exerted by Earth on objects is directed down.		
PS3.D				
	EE.5-PS3-1	Create a model to describe that energy in animals' food was once energy from the Sun.		
LS1.C				
	EE.5-LS1-1	Provide evidence that plants need air and water to grow.		
LS2.A				
	EE.5-LS2-1	Create a model to shows the movement of matter (e.g., plant growth, eating, composting) through living things.		
ESS1.B				
	EE.5-ESS1-2	Represent and interpret data on a picture, line, or bar graph to show seasonal patterns in the length of daylight hours.		
ESS2.A				
	EE.5-ESS2-1	Develop a model showing how water (hydrosphere) affects the living things (biosphere) found in a region.		
ESS3.C				
	EE.5-ESS3-1	Use information to describe how people can help protect the Earth's resources and how that affects the environment.		

Grade 8: Essential Elements Assessed

Topic	EE	Description	Instructional Date Assessed	Spring Date Assessed
			11/13-2/27	3/12-5/18
PS1.A				
	EE.MS-PS1-2 **	Interpret and analyze data on the properties (e.g., color, texture, odor, and state of matter) of substances before and after chemical changes have occurred (e.g., burning sugar or burning steel wool, rust, effervescent tablets).		
PS2.A				
	EE.MS-PS2-2*	Investigate and predict the change in motion of objects based on the forces acting on those objects.		
PS3.B				
	EE.MS-PS3-3*	Test and refine a device (e.g., foam cup, insulated box, or thermos) to either minimize or maximize thermal energy transfer (e.g., keeping liquids hot or cold, preventing liquids from freezing, keeping hands warm in cold temperatures).		
LS1.A				
	EE.MS-LS1-3**	Make a claim about how a structure (e.g., organs and organ systems) and its related function supports survival of animals (circulatory, digestive, and respiratory systems).		
LS1.B				
	EE.MS-LS1-5**	Interpret data to show that environmental resources (e.g., food, light, space, water) influence growth of organisms (e.g., drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, fish growing larger in large ponds than small ponds).		
LS2.A				
	EE.MS-LS2-2**	Use models of food chains/webs to identify producers and consumers in aquatic and terrestrial ecosystems.		
ESS2.A				
	EE.MS-ESS2-2**	Explain how geoscience processes that occur daily (e.g., wind, rain, runoff) slowly change the surface of Earth, while catastrophic events (e.g., earthquakes, tornadoes, floods) can quickly change the surface of Earth.		
ESS2.D				
	EE.MS-ESS2-6*	Interpret basic weather information (e.g., radar, map) to make predictions about future conditions (e.g., precipitation, temperature, wind).		
ESS3.C				
	EE.MS-ESS3-3*	Develop a plan to monitor and minimize a human impact on the local environment (e.g., water, land, pollution).		

*Essential Elements are grade 8 linked
**Essential Elements are grade 6-8 banded

Topic	EE	Description	Instructional Date Assessed	Spring Date Assessed
			11/13-2/27	3/12-5/18
PS1.A				
	EE.HS-PS1-2	Make a claim supported by evidence to explain patterns of chemical properties that occur in a substance during a common chemical reaction (e.g., baking soda and vinegar).		
PS2.A				
	EE.HS-PS2-3	Evaluate the effectiveness of safety devices and design a solution that could minimize the force of a collision.		
PS3.B				
	EE.HS-PS3-4	Investigate and predict the temperatures of two liquids before and after combining to show uniform energy distribution.		
LS1.A				
	EE.HS-LS1-2	Use a model to illustrate the organization and interaction of major organs into systems (e.g., circulatory, respiratory, digestive, sensory) in the body to provide specific functions.		
LS2.A				
	EE.HS-LS2-2	Use a graphical representation to explain the dependence of an animal population on other organisms for food and their environment for shelter.		
LS4.C				
	EE.HS-LS4-2	Explain how the traits of particular species that allow them to survive in their specific environments.		
ESS1.B				
	EE.HS-ESS1-4	Use a model of Earth and the Sun to show how Earth's tilt and orbit around the sun cause changes in seasons.		
ESS3.A				
	EE.HS-ESS3-2	Construct an argument for a strategy to conserve, recycle, or reuse resources.		
ESS3.C				
	EE.HS-ESS3-3	Analyze data to determine the effects of a conservation strategy on the level of a natural resource.		